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The Arris and Gale Lectures

ON

SOME EMBRYOLOGICAL PROBLEMS IN RELATION TO MEDICINE.

Delivered before the Royal College of Surgeons of England on Feb. 28th and March 2nd, 1910,

BY PETER THOMPSON, M.D. VICT.,
PROFESSOR OF ANATOMY IN THE UNIVERSITY OF BIRMINGHAM.

LECTURE II.[1]

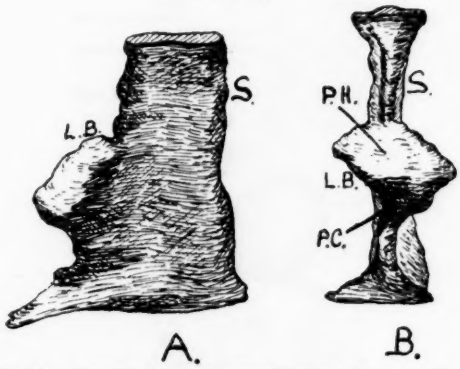
Delivered on March 2nd.

THE LIVER.

MR. PRESIDENT AND GENTLEMEN,—In its first appearance the liver is very early, forming as an outgrowth from the alimentary canal in embryos of 13-14 paired somites. In a 2·5 mm. human embryo, which shows 23 paired somites, the liver bud exhibits an interesting stage which forms a good starting point to study its development. The bud grows out from the alimentary tube opposite the third and fourth cervical somites as a median structure with relatively thick walls inclosing a cavity in communication with the alimentary canal (Fig. 10). In sagittal section it is seen growing into the septum transversum. When viewed from the front the greater part of the outgrowth is on the left of the middle line, and as yet there is no outward indication of the gall-bladder. If, however, the sections themselves are carefully examined under the microscope, liver trabeculæ are found at the cephalic end of the outgrowth, and thus a differentiation into two parts, cephalic and caudal, becomes manifest. These two parts have been designated by Maurer the "pars hepatica" and the "pars cystica," since from the former the liver is mainly derived and from the latter the gall-bladder. This is clearly seen in Ingalls' embryo (4·9 mm. long) at the early part of the fourth week (Fig. 11). The liver has assumed a crescentic form, and when looked at from the front one recognises the gall-bladder distinct from the liver and occupying a position immediately caudal to the point of junction of the duct of the liver bud with the fore-gut. The liver outgrowth is now placed opposite the sixth and seventh cervical somites. Towards the end of the first month the liver has the form seen in Figs. 12 and 13. It is still somewhat crescentic in outline, but the right lobe is larger than the left. Ventrally is seen an extensive area corresponding to the interval between the two layers of the falciform ligament, at the lower part of which enters the left umbilical vein (Fig. 12). To the right of the vein is the mass of mesoderm containing the gall-bladder, the quadrate lobe being still undeveloped. From the upper border of the model a large vein emerges, the ductus venosus Arantii.

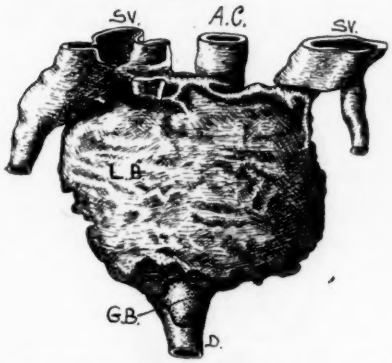
Posteriorly is the attachment of the gastro-hepatic omentum, the plica venæ cavæ occupying the place where the inferior vena cava will subsequently form, the foramen of Winslow indicated by the arrow, the portal vein, and the commencement of the lobus Spigelii. (Fig. 13.) The various areas of contact with neighbouring organs are indicated in

FIG. 10.



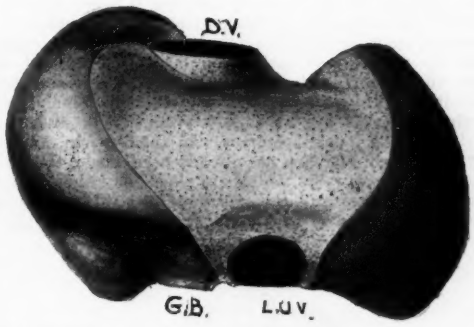
Model of entodermal tube showing the hepatic bud. × 70. A, seen from the left side; B, from the front. Human embryo, 2·5 mm. in length. L.B., liver bud; S., stomach; P.H., pars hepatica; P.C., pars cystica.

FIG. 11.



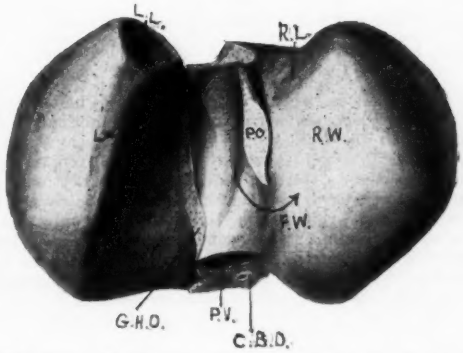
Entodermal tube showing the hepatic bud and gall-bladder. Human embryo, 4·9 mm., modelled by Ingalls. A.C., alimentary canal; D., duodenum; L.B., liver; G.B., gall-bladder; S.V., two parts of sinus venosus receiving veins.

FIG. 12.



Model of liver from a human embryo, 7 mm. in length. × 37½. Seen from the front. G.B., gall-bladder; L.U.V., left umbilical vein; D.V., ductus venosus. The stippled area indicates the interval between the two layers of the falciform ligament.

FIG. 13.



The same as Fig. 12, seen from behind. L.L., impression for left lung; R.L., impression for right lung; L.W., impression of left Wolffian body; R.W., same for right Wolffian body; S., area of stomach contact; G.H.O., gastro-hepatic omentum; P.C., plica venæ cavæ; F.W., foramen of Winslow; P.V., portal vein; C.B.D., common bile-duct.

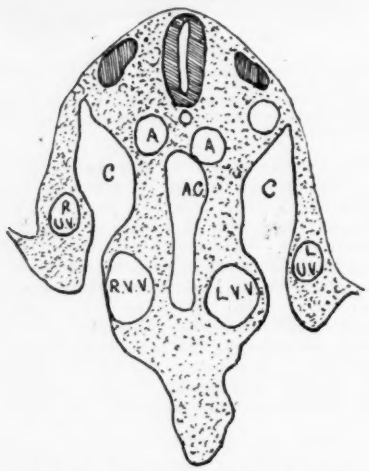
[1] Lecture I. was published in THE LANCET of May 7th, 1910, p. 1247.

Fig. 13. The liver is now placed opposite the upper thoracic somites.

The foramen of Winslow lies caudal to the vena caval mesentery. Where the latter ends the great sac of the peritoneum comes into communication with the lesser sac by a long narrow passage extending across the back of the liver. The lesser sac, or bursa omentalis, is placed between the gastro-hepatic omentum on the left and the plica venæ cavæ on the right. Cranialwards it is prolonged beyond the upper limit of the liver and comes into relationship with the right side of the œsophagus, where it is known as the peri-œsophageal cœlom. This is limited cranially by the septum transversum, and as the dorsal border of the latter descends in relation to the posterior body wall, the peri-œsophageal cœlom becomes progressively diminished in height and finally disappears. It is seen in human embryos from 7 mm. up to 18 or 20 mm.

The fact that the right lobe of the liver is larger than the left at such an early stage is both interesting and significant—interesting, that such a characteristic of the adult organ should be manifest so early; significant, on account of certain other factors with which this feature is associated. In rabbit embryos of about ten days the abdominal veins according to Lewis are absolutely symmetrical, and the same is true for human embryos. In the 2·5 mm. human embryo, to which reference has already been made, the two omphalo-mesenteric veins which are placed on either side of the intestinal canal and the two umbilical veins lying in the somatopleure are practically symmetrical (Fig. 14).

FIG. 14.



Transverse section of human embryo, 2·5 mm., at the level of the umbilicus. A., aorta; C., cœlom; A.C., alimentary canal; L.V.V. and R.V.V, left and right vitelline veins; L.U.V. and R.U.V., left and right umbilical veins.

Owing to influences which are not as yet understood "this system becomes asymmetrical and normally is predominant on the right side." The liver develops more rapidly on that side and becomes a right-sided organ, the stomach is pushed to the left side (see Fig. 8, Lecture I.), and the plica venæ cavæ in which the inferior vena cava will subsequently form persists on the right side only. As F. T. Lewis observes: "It may confidently be assumed that had the original symmetrical veins become predominant on the left side, stomach, liver, and later the inferior vena cava would shift their position resulting in situs inversus."

THE HEART.

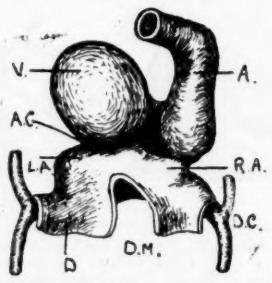
Descriptive accounts of the early stages of development of the heart in the human embryo—i.e., during the first month—are not yet sufficiently numerous to enable us to obtain a satisfactory conception of what takes place. Apart from the difficulties of obtaining material the interpretation and labelling of the various parts of the heart tube are by no means easy, and sometimes give rise to considerable perplexity and doubt. In this connexion the study of abnormal hearts, combined with the wax reconstruction of the cardiac tube in young embryos, has greatly extended our knowledge, and has shown the supreme importance of studying conditions which, though transitory in normal development, may under adverse circumstances become permanent.

The series of changes, both in form and arrangement, which the heart undergoes during the third and fourth weeks are complicated. Physical influences apparently play an important part. As the heart tube is fixed at its two ends, venous and arterial, increase in length of the intermediate moveable part leads to the formation of a loop—the ventricular loop—and the "packing" of the loop into that part of the pericardium best suited for its reception at the time gives rise to an interesting condition, in which the apex of the loop, instead of being in contact with the septum transversum (central part of future diaphragm), as one might expect, is placed far over on the right side (see Figs. 18 and 19).

I now wish to describe, as far as I can from the material at my disposal, what I conceive to be the ontogenetic development of the human heart in the third and fourth weeks, considering only changes in form and arrangement of the ventricular loop. The material includes seven specimens, three of my own and four described by other workers, and all but one have been reconstructed in wax. We are thus able to read the series of events fairly successfully, though there are still one or two gaps to fill in before the picture may be regarded as complete. The seven specimens are as follows:—

1.	Embryo	2·15 mm.	(His)
2.	,,	3·0 ,,	(Own specimen)
3.	,,	13-14 somites	(Low)
4.	,,	2·5 mm.	(Own specimen)
5.	,,	4·9 ,,	(Ingalls)
6.	,,	6·8 ,,	(Piper)
7.	,,	7·0 ,,	(Own specimen)

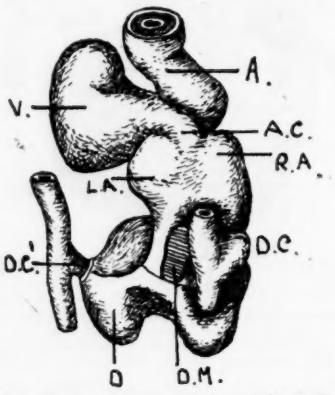
FIG. 15.



Heart of the His embryo, 2·15 mm., seen from behind. L.A. and R.A., left and right auricles; A.C., auricular canal; V., commencement of ventricular loop; A., aortic end of same; D., diaphragm (septum transversum); D.M., dorsal mesocardium; D.C., duct of Cuvier formed by cardinal veins.

The heart in the His embryo (Fig. 15) is perhaps the best known of the series; for many years it has found a place in all our standard text-books, and yet the difficulty of reading the specimen, on account of the uncertainty regarding the position of the auricular canal, has been felt by many. The heart of the 3 mm. embryo (Fig. 16), though somewhat

FIG. 16.

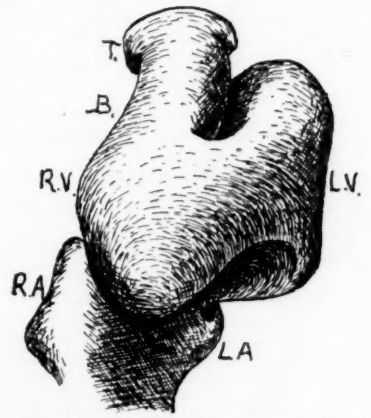


Heart of 3 mm. human embryo seen from behind. L.A. and R.A., left and right auricles; A.C., auricular canal; V. and A., beginning and end of the ventricular loop; D.C. and D.C.', right and left ducts of Cuvier; D.M., dorsal mesocardium; D, septum transversum

older, is of interest in this connexion, since it appears to confirm completely the interpretation which His originally placed upon his specimen. By comparing Figs. 15 and 16 it will be noticed that although there are obvious differences in arrangements of the parts, the parts themselves closely agree. The auricles are in Fig. 16 more expanded, but the auricular canal retains the same relative position in both.

It will further be noticed that in the two specimens under consideration the increase in length of the heart tube is most marked at the arterial end where the ventricle is developing, and here a definite bend is formed, the ventricular loop. The shape of the loop is not unlike that of the stomach, the cardiac and pyloric ends, as well as the lesser and greater curvatures being recognisable (Fig. 17). Whilst the auricles continue to enlarge and

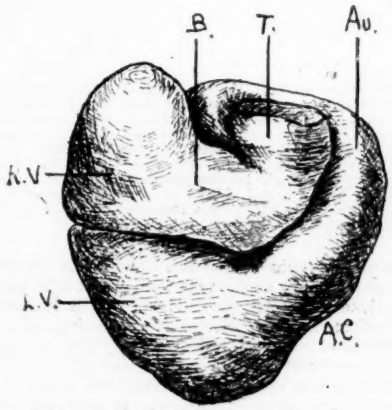
FIG. 17.



Ventricular loop of same heart as shown in Fig. 16, seen from the front, × 100. L.V., left ventricle; R.V., right ventricle; B., bulbus; T., truncus; L.A. and R.A., left and right auricles.

extend upwards so as to embrace the aortic end of the tube, the ventricular loop goes through a remarkable series of changes in position, the result apparently of the disproportion between its length and the pericardial cavity which encloses it, and also of the packing away of the loop in the most convenient place. These changes can be followed in Figs. 18 and 19. When the loop first forms it is placed

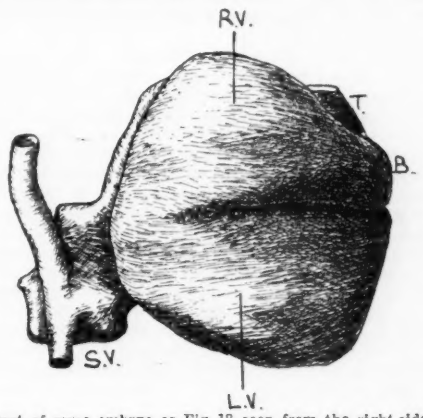
FIG. 18.



Heart of 2·5 mm. embryo, seen from the front, × 75. AU., auricular part of heart, embracing T., the truncus; B., bulbus; R.V., right ventricle; L.V., left ventricle; A.C., level of auricular canal.

ventrally and directed towards the right. Then it rotates round a cranio-caudal axis and comes to lie almost entirely on the right side of the body. The future apex is at the extreme right and the ventricles are placed one above and one below the horizontally disposed cleft related to the lesser curvature. The heart in the embryo of 13–14 somites illustrates this movement at a little earlier stage.

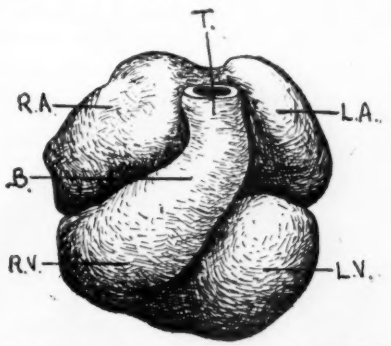
FIG. 19.



Heart of same embryo as Fig. 18, seen from the right side, × 75. B., bulbus; T., truncus; R.V., right ventricle; L.V., left ventricle; S.V., sinus venosus, receiving right duct of Cuvier.

The apex of the loop next moves through about a quarter of a circle, descending from the right downwards towards the middle line (Fig. 20), the lesser curvature cleft becoming

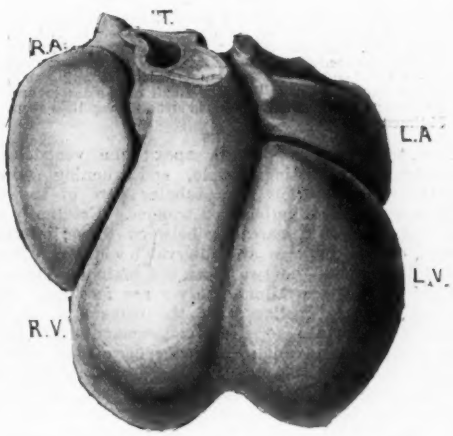
FIG. 20.



Heart of human embryo 4·9 mm. in length, modelled by Ingalls, × 30. R.A. and L.A., two auricles; R.V. and L.V., two ventricles; B., bulbus; T., truncus.

almost vertical. At the conclusion of the movement the apex is bifid, showing that the two ventricles are beginning to expand caudalwards, and the true apex of the heart—i.e., the extremity of the left ventricle—is now apparent (Fig. 21)

FIG. 21.



Heart of human embryo 7 mm. in length, seen from the front, × 33½. R.A. and L.A., right and left auricles; R.V. and L.V., right and left ventricles; T., truncus, just at the point where it is leaving the pericardial cavity.

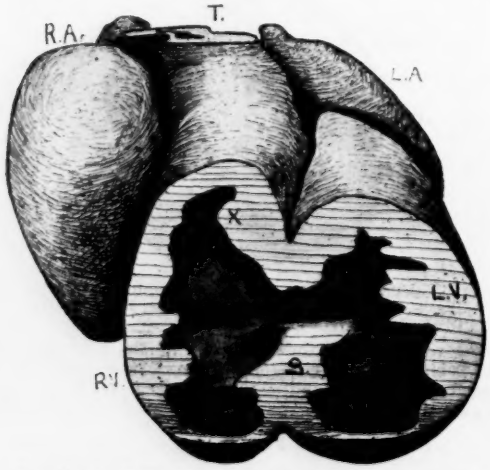
The heart in Ingalls' embryo shows the half-way stage in this descent, and the completion is seen in both the 6·8 mm. and the 7 mm. specimens.

The reason why the ventricular part of the heart passes over to the right side is not known. Various influences have been suggested, such as the asymmetry of the vessels, the pressure of neighbouring organs, &c. A left-sided ventricular loop has not, as far as I know, been observed, but it may be assumed to occur in certain cases of situs inversus.

Turning now to the aortic end of the ventricular loop, a specially interesting feature is noticeable in most of the illustrations of the heart tube—viz., the bulbus cordis. It is that part of the tube lying between the end of the ventricular loop and the aortic stem or truncus. It represents a subdivision of the heart which is present in a marked form in lower vertebrates, such as the shark. It is not necessary for me to give any special account of this chamber, since Professor A. Keith has given in his Hunterian lectures for 1909[2] a full description of its fate and the various abnormalities which may be traced to the arrest of the process which ends in the incorporation of the bulbus in the right ventricle. What I particularly wish to do is to show from the series of specimens with which we are dealing that the bulbus is a well-marked division of the heart in the third and beginning of the fourth weeks, and that towards the end of the fourth week there is no distinct demarcation externally between it and the right ventricle on the one hand, and the truncus on the other. In certain cases, however, where there has been defective development, it may remain distinct.

In Fig. 21 the apex of the heart is bifid—that is to say,

FIG. 22.



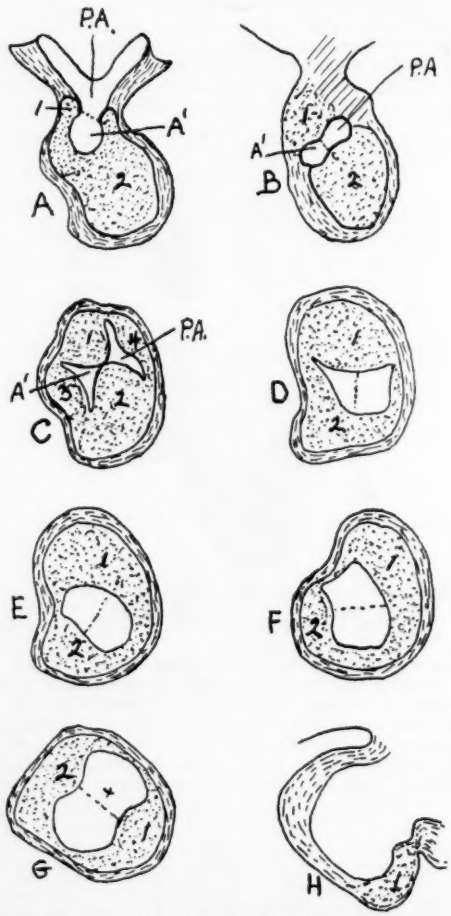
Same heart as in Fig. 21, with a piece of the model removed to show the interior of the two ventricles. R.A., L.A., R.V., L.V., same as before; S., septum inferius, partially dividing the ventricles. The X is placed over the lower end of the dorsal endocardial thickening which, beginning at T, is now ventral in position. The small rounded apertures represent the mitral and tricuspid orifices, magnified about 33 times.

each ventricle has a definite apex; the ventricles are externally easily distinguishable, and running upwards from the right ventricle is a tubular part of the heart which represents the bulbus and truncus. Externally there is no clear line of demarcation between them; internally, however, certain features are observable which enable us to say definitely where the two meet, the main one being the level at which the semilunar valves are forming. Above that level we are dealing with the truncus which later becomes divided into aorta and pulmonary artery, whilst below is the bulbus which becomes incorporated with the right ventricle. As this region of the heart tube is of such great importance from the embryological and pathological points of view, it will clearly be advantageous to study it in some detail, and the heart of the 7 mm. embryo is an excellent specimen for the purpose.

[2] THE LANCET, March 13th (p. 745), 20th (p. 825), and 27th (p. 895), 1909.

The series of drawings in Fig. 23 are sections of the tube beginning at the upper (cephalic) end and concluding with one at the level of the communication of the bulbus with the right ventricle. They show that internally are certain thickenings of endocardium, which may be divided into two groups—primary and secondary. The primary thickenings

FIG. 23.



Eight transverse sections through the tubular part, representing the truncus and bulbus of the heart shown in Fig. 22. Section A is from near the upper end of the truncus, T. Section H is taken from about the level where the cross is placed, and the others are taken at intervals between these two. The anterior edge of each section is inferior. P.A., pulmonary lumen and its two branches; A, aortic lumen; 1 and 2, primary, and 3 and 4, secondary endothelial thickenings. The dotted lines represent the approximate position of the future septum.

beginning at the cephalic end run downwards (caudally) in a spiral manner as far as the ventricle, and it is by the fusion of these thickenings that the division of the lumen is subsequently effected. The secondary thickenings are confined to a definite level which extends over very few sections, and they represent two of the four thickenings out of which the aortic and semilunar valves are formed, the other two being the primary thickenings at this level. It may also be noted that the spiral of the primary thickenings is a right spiral and that it extends through two right angles. That thickening which is ventral and to the left in A is dorsal and to the right in G, and further that which is dorsal and to the right in A is ventral and to the left in G. This degree of spiral winding is particularly interesting, and its significance will now be observed. Tracing the two lumina which will arise after fusion of the primary cushions, it will be clear, since the upgrowing interventricular septum eventually fuses with the septum X in G, that the pulmonary lumen will

become continuous with the right ventricle and the aortic with the left.

Dr. Ingalls,[3] in his account of the heart of the 4·9 mm. embryo, describes in detail the arrangement of the thickenings in this part of the tube, and in connexion with the foregoing its perusal is of much interest since there is about a week's difference in age between the two specimens. "The endothelial tube," he says, "is everywhere separated from the muscular wall, and where the latter joins the epithelium of the roof of the pericardial cavity the connective tissue cells situated between them and the endothelial tube continue into the mesenchyme of the gill arches. These cells, which originate from the endocardium, are regularly arranged around the endothelial tube, which is divided, as already mentioned, by a large interval from the thicker muscular tube. The latter has throughout a transversely oval form, the shape of which that of the inner tube is completely independent. The endothelial tube has cranially a corresponding form, but soon the more reduced connective tissue cells collect themselves together principally ventrally and dorsally. We follow now the truncus and bulbus caudalwards and we find that these little accumulations of cells gradually alter in position, and indeed the ventral goes towards the right and the dorsal towards the left, and corresponding to this the left end of the longer diameter of the tube turns itself also ventralwards. This twisting amounts on the whole to 180°." Piper, on the other hand, in the heart of the embryo 6–8 mm. describes the thickenings as having "from below upwards a left spiral course and describing ⅜ of a complete rotation." A consideration of these various facts opens out certain problems to which brief reference may now be made.

1. *Right-handed and left-handed spirals.*—In the heart of the 7 mm. embryo the endocardial thickenings, as just stated, run a right spiral course, and the septum when formed and joined to the ventricular septum will divide the original single lumen into two, the anterior of which will communicate with the right ventricle and the posterior with the left. In other words, the pulmonary artery taking origin from the right ventricle will pass upwards in front of the aorta, pass round its left side, and terminate in a plane behind it, just as in the adult. If, on the other hand, the thickenings ran a left spiral course through 180 degrees, the two lumina, pulmonary and aortic, when formed, would terminate below in precisely the same way, the pulmonary communicating with the right ventricle and the aortic with the left. The essential difference in the two cases would be, that with the occurrence of the left-handed spiral the pulmonary artery arising from the right ventricle would pass upwards in front of the aorta, pass round its *right* side, and terminate in a plane behind it. The condition would, in fact, be like that found in the usual case of transposition of the heart, where there is *lateral* transposition of aorta and pulmonary artery.

Mr. Adrian Stokes[4] has recently published a very interesting account of an abnormal heart which was transposed. In his specimen, however, the aorta and pulmonary artery, instead of being *laterally* transposed were transposed *antero-posteriorly*, and he supports the view that this condition, in which the aorta is in front and the pulmonary artery behind, depends on the septum describing a left-handed instead of a right-handed spiral as it passes down to join the interventricular septum. From a consideration of the data derived from a study of the heart in the 7 mm. embryo and Ingalls's embryo it is difficult to see how the interchange is brought out by simply reversing the spiral. I think that an explanation based on an arrest of development which may take place at a certain stage fits in better with the embryological facts. This explanation may, however, be conveniently taken after the consideration of another important point in the ontogeny of the aortic end of the heart tube.

2. *Relationship of aortic and pulmonary lumina at level of semilunar valves.*—On examining Section C, Fig. 23, which is taken at the level of the semilunar valves, it will be seen that the aortic passage is in front and to the right, whilst the pulmonary passage is behind and to the left. Clearly, therefore, some further changes are necessary in order to bring them into their true relative positions as found in the adult.

Dr. A. Langer,[5] who has dealt with this subject very fully in birds, describes at the end of his paper the condition of affairs in a human embryo of 27–28 days, which closely agrees with the description given above. Moreover, he finds that in order to bring the aorta and pulmonary passages into their final positions a certain amount of torsion takes place at the upper part of the tube; and in a human embryo 8·5 mm. long, in the possession of Professor A. Robinson, which I have had an opportunity of examining, the torsion has proceeded to the extent that the pulmonary passage is in front and to the left. The further stages I have not so far had an opportunity of investigating, but reconstructions at the fifth and sixth weeks should definitely clear up the point. At any rate, an alteration in position must take place, and its nature is probably closely bound up with the changes taking place in the bulbus which lead to its incorporation with the right ventricle. These changes are possibly the result of unequal rates of growth.

In his Hunterian lectures, published in 1909, Professor Keith, from a study of abnormal hearts, arrived at the conclusion that there takes place during development an atrophy of the bulbar part of the primitive cardiac tube which brings the two orifices into their normal positions. The evidence of ontogenetic development as described above confirms the main fact embodied in that conclusion. The change which occurs, whether it be spoken of as a torsion or an atrophy, leading to the assumption of the normal position of aortic and pulmonary orifices is a definite feature in the march of events, and it will be interesting to see if further study of the developing heart in the first two weeks or so of the second month will demonstrate the nature of its cause.

3. *Suggested explanation of antero-posterior transposition of aorta and pulmonary artery based on the arrangement of parts at the end of the fourth week.*—In the usual form of antero-posterior transposition of the aorta and pulmonary artery, the latter arises behind the aorta from the left ventricle, while the aorta placed in front springs from the right ventricle. A much rarer form of transposition is that in which the aorta and pulmonary artery spring from the left and right ventricles respectively, as in the normal heart, whilst at their origin they are transposed antero-posteriorly. In situs inversus the heart may or may not exhibit antero-posterior transposition of the great trunks.

Various explanations have been advanced by Rokitansky, Max Mann, Keith, and Stokes, amongst others, to account for these puzzling conditions, in which there is one feature in common, and that is a transposition, in the antero-posterior direction, of the aorta and pulmonary artery. According to Keith, the condition is brought about by a reversal of those processes in the bulbus cordis which lead to the normal arrangement, whilst Stokes finds the clue to the problem in a reversal of the spiral septum in the bulb. On the other hand, both Rokitansky and Mann believe that the aortic end of the heart in these cases undergoes an abnormal degree of rotation.

The explanation which I venture to put forward is based on the relationship which exists between the aortic and pulmonary passages in the heart of the 7 mm. embryo, and the assumption that arrest of development may take place at this stage. The relationship is just the one which is found in transposition. The aorta is in front and to the right of the pulmonary artery, the position of the aortic cusps is reversed, the non-coronary cusp being ventral and to the right. If it be assumed, further, that below the valves the septum is not formed, then the anterior passage would lie over the right half of the ventricle and the posterior over the left. If the septum be present, however, then the anterior passage must go to the left and the posterior to the right ventricle.

It is well known that in many of these cases of transposition the interventricular septum is feebly developed, or if it is formed, that an interventricular foramen frequently persists. The explanation suggested above seems applicable mainly to this type of case, in which there has been absence of development, or faulty development, of the part of the spiral septum below the semilunar valves.

[3] Archiv für Mikroskopische Anatomie und Entwicklungsgeschichte, Band lxx., 1907.

[4] Journal of Anatomy and Physiology, vol. xliii., p. 301.

[5] Morphologisches Jahrbuch, Band xxii., 1894–95, p. 99.

A CONTRIBUTION TO THE STUDY OF THE INFLUENCES DETERMINING THE PREVALENCE OF BOVINE TUBERCULOUS MASTITIS.[1]

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1. *Introduction.*

IN studying the mode of spread of any infectious disease it is always necessary to keep in mind the complexity of the conditions influencing or determining the occurrence of infection. To the pathologist an infectious disease is invariably the result of the action of an invading or parasitic organism upon an invaded organism or host.

The occurrence of a case of "tuberculosis vera" may be taken as absolute proof that Koch's bacillus has penetrated and multiplied in the tissues of an individual in whom it has caused the symptoms and lesions which we associate with tuberculosis. The converse is not true, and we cannot say that the presence of tubercle bacilli in a locality, or even within the body of an individual, is invariably followed by the production of tuberculosis. This sequence is probably the exception. The occurrence of cases of infectious disease is not determined only by the presence of the essential causal agent, but also by the coöperative agency of various factors, some of which become, under certain circumstances, so important that they more or less completely overshadow the essential cause. This is particularly noticeable in the case of diseases such as tuberculosis, which are caused by widely-distributed microbes. If, whenever the opportunity of infection occurred, the bacillus were abundant or virulent enough, and its possible victims were in a receptive state, there would be very few persons free from tuberculosis among civilised communities.

The importance of predisposing factors is often so great that not a few clinicians and administrators have given scant attention to the essential cause. It must be acknowledged that in many cases it is possible to obtain excellent results by dealing thoroughly with predisposing causes, and often there is no other course open to us. It is, however, never safe to disregard, even temporarily or partially, the *causa causans*, because it is a variable factor, and may, under the influence of various circumstances, increase in amount or acquire infective powers exceeding the average. Neither is it safe to trust entirely the action of natural or artificial curative agencies. Recoveries from infectious diseases may be apparent or real, and do not invariably result in so great a reduction in the number of infective centres as might be expected. Recoveries brought about by natural processes introduce also an additional element of complexity in our estimates of the incidence of various infectious diseases.

In studying the conditions which influence the prevalence of any infectious disease we must therefore take account of the possible action of a great number of factors which may roughly be grouped into the following categories: The distribution and habits of the infecting parasite, the conditions influencing the quantity of the parasite, the conditions influencing the virulence of the parasite, the opportunities and channels of infection, the conditions influencing the resistance of the possible host, and the proportion and completeness of recoveries.

I have thought it necessary to make these few preliminary, and I might almost say commonplace, remarks to make it clear that I have no illusion regarding the completeness of the facts upon which this communication is based. I must also at this stage explain that it is not my intention to enter upon a discussion of the relations of bovine to human tuberculosis. I am fully convinced of the unity of human and bovine tuberculosis—a unity which does not preclude variations. I believe that, both in man and cattle, infected food is an important conveyer of tuberculous infection, and that the milk of cows suffering from tuberculous mastitis is the most important means of transmission of bovine tuberculosis to the infant.

[1] A paper read before the Epidemiological Section of the Royal Society of Medicine on April 22nd, 1910.

2. *Tuberculosis of the Udder in Relation to Tuberculosis of other Organs.*

Cows affected with tuberculosis of the udder are, in the majority of cases, suffering also from more or less advanced tuberculosis of other organs. I have personally examined post mortem the organs of a great number of cows affected with tuberculous mastitis, and in only one case out of nearly 100 have I failed to discover tuberculous lesions of internal organs. In three more cases out of the same number the internal lesions were limited; in the great majority of cases they were extensive. Out of more than 300 cows suffering from tuberculosis of the udder, and examined by several veterinary surgeons, only four have been reported to me as having been free from any other tuberculous lesions. Primary tuberculosis of the cow's udder would therefore appear to be of rare occurrence.

Tuberculous mastitis is not common in young cows. I estimate that about 90 per cent. of the animals suffering from this lesion are middle-aged or old cows—i.e., cows over four or five years of age. I regret not to be able to give more definite information on this point, which is not without importance; but, in the absence of any regular system of registration and inspection of cows, it is practically impossible for a veterinary surgeon to ascertain the exact age of all the cows inspected by him during an occasional visit to a farm. An experienced man can, however, estimate rapidly and fairly accurately whether a cow is young or old. It is mostly upon data gathered in this way, more especially by Mr. J. W. Brittlebank, whose experience in such matters is well known, that my opinion regarding the age of cows is based.

From personal observations made between the years 1896 and 1898 I came to the conclusion that in about 3·7 per cent. of all cows suffering from tuberculosis of any organ the udder was affected with tuberculosis.[2] This estimate was rather higher than those made at the time by three well-known veterinary authorities, but subsequent experience has shown me that even my estimate was barely high enough. It may therefore be safely assumed that for each cow affected with tuberculous mastitis there are on an average about 27 cows with tuberculous lesions of other organs. From the facts collected in this brief summary it seems reasonable to infer, (1) that the presence of a tuberculous udder on a farm is in the great majority of cases evidence that there is on that farm at least one cow suffering with advanced, or fairly advanced, tuberculosis; and (2) that the number of cows found affected with tuberculosis of the udder in a district may be taken as a rough index of the probable number of tuberculous cows in that district.

A study of the conditions influencing the prevalence of tuberculous mastitis has therefore distinct bearing upon the whole problem of bovine tuberculosis. The importance of this conclusion depends on the facts: (1) that tuberculous mastitis can, by bacteriological methods, be diagnosed with great accuracy; (2) that no other accurate method is at present available for estimating approximately the relative prevalence of bovine tuberculosis in the various parts of any extensive area; and (3) that, through the work done in Manchester, we are now in possession of a large mass of reliable data regarding the incidence of tuberculous mastitis.

If systematic tuberculin testing of all cattle could be practised it would be easy, in a comparatively short time, to obtain more complete data, notwithstanding the fact that the tuberculin reaction often fails in old cattle suffering from advanced tuberculosis; but this simple method was not available 14 years ago, when I began this investigation.

The testing of milk for the presence of tubercle bacilli, though it does not indicate directly the total number of tuberculous animals, has an advantage over the tuberculin test in that it reveals the cows that are the most dangerous to human health.

3. *Collection of Data; Examination of Samples of Milk; Inspection of Cows and Sheds.*

A short statement of the manner in which the Manchester Milk Clauses (1899) have been administered under Dr. James Niven's direction during the last eleven years will make clear the nature of the evidence upon which my statistics are based.

Samples of cows' milk are taken by the food and drugs inspector from the milk-cans on their arrival at the railway stations or elsewhere within the city. Each milk-can

[2] "Prevention of Tuberculosis in Cattle," Veterinarian, July and August, 1899.

contains the milk of several cows, and for this reason the milk obtained from it is termed "mixed milk." The source of each of these samples is carefully recorded. They are submitted to microscopical examination and tested by inoculation. The farms supplying milk found capable of producing tuberculosis are inspected; the cows are examined by the veterinary inspector, who takes a sample of milk from each udder that appears to him diseased and possibly affected with tuberculosis. These samples of unmixed milk are tested bacteriologically, and when any is found capable of producing tuberculosis this is taken as a proof that the corresponding cow is secreting tuberculous milk, and that it is in all probability suffering from tuberculous mastitis. The farmer is required by the medical officer of health to isolate the cow or cows producing tuberculous milk, and at the same time he is advised to have the animal slaughtered in the presence of the veterinary inspector. As this advice is followed in the majority of cases, opportunity is afforded to verify the accuracy of the bacteriological finding, and an important source of infection is removed.

With the sanction of the Health Committee I had from the first certain information relating to each farm and to each cow dealt with entered on forms which I provided for that purpose. Dr. Niven has kindly furnished me with additional data whenever it was possible for him to do so, and with his sanction I have also obtained from Mr. Brittlebank valuable information regarding the state of the inspected cows and cowsheds, and the exact position of the farms which were not clearly indicated on the ordnance map. As a detailed account of my methods and results has recently appeared in the Thirty-Eighth Annual Report of the Local Government Board,[3] it would not serve any useful purpose to burden this communication with similar details. This report—the scope of which was indicated to me by Dr. Arthur Newsholme—contains an account of: (1) Experiments which I made between the years 1892 and 1908; (2) methods which I devised before 1895 for administrative purposes; (3) the results of the examination, for various sanitary authorities, of 7000 samples of milk, carried out in my laboratory between the years 1896 and 1908; (4) the sources of the tubercle bacilli found in the milk examined; and (5) the distribution of the farms supplying tuberculous milk. Some details not included in the above report are given in another paper which I read last November before the Manchester Statistical Society.[4]

For the present purpose it will be sufficient to reproduce here tabulated statements of the results obtained in connexion with the Manchester milk-supply only. In the following tables I have brought up to date the returns published in the report and communication mentioned above by the addition of the figures relating to the years 1908 and 1909:—

TABLE I.—*Samples of Mixed Milk Collected in Manchester during the Years 1896 to 1909 inclusive.*

Years of collection.	Total number of samples tested for tubercle bacilli by inoculation.	Samples found to be capable of producing tuberculosis by inoculation.	
		Actual number.	Percentage.
Three years, 1896-99*	110	19	17·2
1900	358	40	11·1
1901	440	43	9·7
1902	424	38	8·9
1903	430	51	11·8
1904	425	43	10·1
1905	757	60	7·9
1906	704	47	6·6
1907	722	43	5·7
Three years 1908	341 } 1712	30 } 109	8·9 } 6·36
1909	649	36	5·7
Totals, 1896-1909	5360	450	8·3

* No mixed samples taken in 1899.

This table shows that, up to the end of the year 1909, 5360 cans of mixed milk sent to Manchester were sampled on their arrival, and that 450 of these cans were found to contain tuberculous milk. This makes an average of 8·3 per cent. for the whole period.

TABLE II.—*Samples of Unmixed Milk Obtained by the Veterinary Inspector from Cows the Udders of which appeared to him to be Possibly Affected with Tuberculosis.**

Years of collection.	Total number of cows tested.	Number of cows affected with tuberculous mastitis.	
		Actual number.	Percentage.
1896–98	29	5	17·2
1899	19	3	15·7
1900	142	31	21·8
1901	166	34	20·4
1902	95	32	33·6
1903	68	28	41·1
1904	85	18	21·1
1905	108	28	25·9
1906	125	33	26·4
1907	100	30	30·0
1908	74	26	35·1
1909	71	22	38·0
Totals, 1896–1909	1082	290	26·8

* These cows were all on farms from which tuberculous milk had been sent to Manchester.

This table shows that up to the end of 1909 the udders of 1082 cows, among those that had been examined clinically by the veterinary surgeon, showed signs of being possibly affected with tuberculosis, and that of these 1082 udders 290 were proved to be capable of producing tuberculosis in guinea-pigs by inoculation.

TABLE III.—*Number of Farms Tested each Year, with Number of Farms sending Tuberculous Milk to Manchester.*

Years.	Farms tested for the first time.			Farms retested.		
	Total number tested.	Number found tuberculous.		Total number.	Number found tuberculous.	
		Actual number.	Percentage.		Actual number.	Percentage.
1896–1900	427	72	16·8	—	—	—
1901	161	16	9·9	207	28	13·5
1902	131	18	13·8	217	23	10·5
1903	109	12	11·0	230	32	13·9
1904	111	12	10·8	220	26	11·7
1905	209	15	7·1	362	33	9·1
1906	145	9	6·2	410	39	9·5
1907	92	5	5·4	457	35	7·6
1908	60	4	6·6	218	24	11·0
1909	168	13	7·7	446	25	5·6
Totals...	1613	176	10·9	2763	238	8·6

1613 farms were therefore among them tested 4382 times, and were found on 414 occasions to supply tuberculous milk. In the group of farms retested are included farms which were not found tuberculous when first tested, but were found tuberculous afterwards.

Tables I., II., and III. are of great interest from an administrative point of view. Table I. shows that in the three years 1896 to 1899 (exclusive) 17·2 per cent. of the cans of milk arriving in Manchester contained tuberculous milk capable of infecting experimental animals, and that the average for the three years ending with the year 1909 had been reduced to 6·36 per cent. This result had been in great part obtained by the removal from the herds supplying Manchester of some 290 cows (Table II.) proved by bacteriological examination to be suffering from tuberculosis of the udder and by sanitary measures promoting the health

[3] Supplement containing the Report of the Medical Officer for 1908–09, pp. 341 to 414.
[4] The Manchester Milk-supply from a Public Health Point of View, November, 1909.

of the cows. The effect of these measures is also indicated in Table III., which shows that the number of farms supplying tuberculous milk is now less than half of what it was in 1900. In order to find out whether this improvement was not attributable to influences other than the active supervision exercised by the Manchester authority I selected three quite separate districts, situated respectively in the northern, eastern, and southern parts of the area from which Manchester obtains milk. I then compared the frequency of tuberculous infection of the milk sent from the farms in each of these districts to Manchester and of the milk sent from neighbouring farms situated in the same districts to other towns. All the samples of milk used for this comparison having been collected according to the same methods, and examined in my laboratory during the same period, the results are strictly comparable. The results are summed up in the following short table:—

TABLE IV.—*Comparison of the Results of the Examination of 745 Samples of Mixed Milk supplied respectively to Manchester and Four other Towns during the Years 1906 and 1907, and obtained from Farms situated in Three Different Districts.*

Districts in which the farms supplying the milk examined are situated.	Proportion of tuberculous milk supplied to each town (1906–7).						
	Manchester.			Town A, 49 samples.	Town B, 84 samples.	Town C, 69 samples.	Town D, 73 samples.
	111 samples	194 samples	165 samples				
	%	%	%	%	%	%	%
Northern district	3·6	—	—	4·0	—	—	—
Eastern district	—	4·6	—	—	11·9	8·6	—
Southern district	—	—	7·2	—	—	—	13·7

It will be noticed that in each case the proportion of tuberculous milk reaching Manchester was materially less than that reaching other towns, notwithstanding the fact that originally the milk sent to Manchester from the same districts was infected even to a greater extent than the milk supplied to the four other towns during the years 1906 and 1907. It is also clear that the cows kept respectively in the northern, western, and southern districts were very unequally affected with tuberculosis.

The results recorded in Tables I. to IV. show clearly that the skilful administration of the Manchester Milk Clauses by Dr. Niven has brought about a very great improvement in the Manchester milk-supply. It is not, however, with this aspect of the question that the present communication is concerned, but with the indications which the figures previously quoted supply regarding the distribution of tuberculosis. They indicate clearly (1) that various districts are very unequally infected with tuberculosis; (2) that bovine tuberculosis is preventable to a very material extent; and (3) that at least some of the conditions against which preventive measures have been directed are of importance in relation to the prevalence of bovine tuberculosis.

4. *Proportion of Tuberculous Farms in Various Regions.*

For the purpose of ascertaining the distribution of tuberculous farms in the region dealt with I have prepared a map in which the position of each of the farms that have been tested between 1896 and 1909 is indicated. I have subdivided this map, which is based upon the "one-inch-to-the-mile" ordnance map, into one-square-mile areas. These geometrical areas are much more convenient for this kind of investigation than the larger and unequal areas corresponding to administrative districts, the shape of which is also too irregular to allow of accurate comparison being made. The *one-square-mile* areas are grouped in one-mile-broad *longitudinal zones*, numbered consecutively from west to east, and in one-mile-broad *latitudinal zones*, numbered from north to south. The exact position of each one-square-mile area may therefore be accurately determined by two numbers. To facilitate reference I have grouped the longitudinal zones into four-mile-broad zones, each of which is designated by a capital letter. The latitudinal zones are grouped in the same way, and each four-mile-broad latitudinal zone is numbered with a Roman numeral.

The position of each of the tested farms was spotted on this map. The position of the farms which were not indicated by name in the ordnance map has been determined with the assistance of Mr. Brittlebank, whose intimate knowledge of the various districts under consideration has been of very great value to me. Notwithstanding the trouble taken to indicate as accurately as possible the position of the farms not shown in the ordnance map, it was obviously impossible to avoid a certain amount of error; this probably does not exceed quarter of a mile, and in the great majority of cases is much less. In this spot map all the farms tested or inspected between 1896 and 1909 which have been found tuberculous at one time or another during the 13 years are indicated.

In summing up the facts brought out by this map I will avoid any reference to the political divisions of the areas under investigation, as this would serve no useful purpose, and might, as it has done on a previous occasion, give rise to unnecessary annoyance and misconception.

In Table V. the situation of the various districts is indicated by the letters and numerals corresponding respectively to the longitudinal and latitudinal four-mile zones. It does not include 89 farms which were tested between June, 1909, and December, 1909. The addition of these 89 farms brings the total of inspected farms to 1613, of which 344, or 21·3 per cent., have at one time or another during the last 13 years been found to produce tuberculous milk. The addition of the 89 farms does not alter the percentage previously arrived at.

TABLE V.—*Proportion of Farms found Tuberculous in Various Regions.*

Latitudinal zones.	Longitudinal zones.	Farms tested, 1896–1909.			Tuberculous farms inspected.		
		Number.	Found tuberculous.	Per cent.	Number.	Tuberculous udders found.	Per cent.
North of Map							
III.	I	3	—	—	—	—	—
IV.	M						
IX.	L	76	8	10·5	7	4	57·1
X.	J, K, L						
XI.	D, G, J, K, L						
XII.	F, G, I, J, K						
XIII.	F	102	15	14·7	12	9	75·0
XIV.	F, M						
XV.	G, H, J, K, M, N						
XVI.	L						
XVII.	I, K, L, M						
XVIII.	K, L, M, N, O	101	18	17·8	15	13	86·6
XIX.	I, J, K, L, M, N, O	123	28	22·7	28	16	57·1
XX.	I, J, K, L, M, N, O, P, Q	263	63	23·9	55	43	78·1
XXI.	I, J, K, L, M, N, O, P, Q	279	83	29·7	80	55	68·7
XXII.	E, F, G, H, I, J, K, L, M, N, P, Q, R	181	45	24·3	40	26	65·0
XXIII.	F, G, H, I, J, K, L, M, N, P, Q, R, S	143	20	14·9	19	13	68·4
XXIV.	H, I, K, L, M, N, O, P, Q, R, S, T	101	17	16·8	16	9	56·2
XXV.	H, I, J, K, M, N, O, P, Q, R, T	62	14	22·5	14	11	78·5
XXVI.	H, I, J, K, L, N, O, P, R, S	90	15	16·6	(12	12	100)*
XXVII.	H, I, K, M, L, O, P						
XXVIII.	E, F, G, H, I, J, L, O, P, Q, S						
XXIX.	F, G, I, P, Q						
XXX.	D, C						
XXXI.	Q						
	Totals	1524	326	21·3	298	211	70·8

* Several of these farms were inspected, primarily, in new districts.

Table V. brings out clearly the very unequal distribution of tuberculosis of the udder. To obtain comparable numbers

of farms I have, where necessary, grouped together adjacent zones. The effect of this is to reduce the contrast between the best and the worst districts, but, as all the farms in each district have not been tested, this obliteration of excessive contrasts tends to make the figures more reliable. Manchester is included in the latitudinal Zones XVII. and XVIII.; nearly all the farms in that zone are situated either within the town boundary or in the neighbourhood of the town. On nearly 16 per cent. of these farms cows with tuberculous udders have at one time or another been found.

In the sixteen-mile-broad group of Zones IX., X., XI., and XII. (north of Manchester) the percentage was ...	10·5
In the twenty-mile-broad group of Zones XIII., XIV., XV., XVI., and XVII. (south of the latter and including the northern half of the town) the percentage was ...	14·7
In Zones XVIII. and XIX., eight miles broad (including the southern half of Manchester) the percentage was ...	17·8
In Zone XX. the percentage was	22·7
,, XXI. ,, ,, ...	23·9
,, XXII. ,, ,, ...	29·7
,, XXIII. ,, ,, ...	24·3
,, XXIV. ,, ,, ...	14·9
,, XXV. ,, ,, ...	16·8
,, XXVI. ,, ,, ...	22·5
In Zones XXVII., XXVIII., XXIX., XXX., and XXXI. the percentage was	16·6

In attempting to discover the causes which have brought about this unequal distribution it is necessary to consider the possible influence of a number of factors. The area under consideration is not extensive enough to allow of such marked climatic differences as might reasonably be expected to have brought about the unequal distribution of the disease. There is no obvious relation between the distribution of the disease and the geological features of the various districts. I have not, however, analysed yet the facts sufficiently fully to be in a position to express a final opinion upon this point. With regard to the topography of the area there is one coincidence which at once calls for notice. A great part of the land in the region south of Manchester, where tuberculosis was very prevalent, is distinctly at a lower level, on an average, than the northern regions, where tuberculosis was less prevalent. The spot map shows, however, that there are several high-level districts that are much affected, and many low-lying districts where farms are comparatively free from infection.

5. *Influence of Altitude and of Vicinity of Rivers.*

To study the influence of altitude and other physical features of the land, I have prepared a map of Lancashire and Cheshire in which the rivers, and the 300-feet and the 1000-feet contour lines are shown. These data are sufficient to indicate broadly the elevation and configuration of the surface of the land in most of the districts in which the farms are situated. The course of the rivers in the lowest regions may be taken to indicate the parts where excessive dampness may be expected. On the same map I have indicated in each square-mile area the number of farms tested, and the number of those which have been found tuberculous at one time or another between 1896 and 1909. This map shows, therefore, the proportion of farms that have been found tuberculous out of the total number examined in each square-mile area, and at the same time the altitude in each area and its relation to streams.

The information obtainable from this map is summed up in Table VI., according to the same plan as the general results of the inspection of farms have been tabulated in Table V. The number of farms included in Table VI. is smaller than in Table V., because the second map takes up only the western slopes of the Pennine Chain in the regions corresponding to Lancashire and Cheshire, it includes an area containing 1234 farms out of a total of 1613 tested up to the end of December, 1909. The percentage of farms found tuberculous in the total area and in the area shown in the map is as follows: Total area, 1613 farms, of which 344 were tuberculous, or 21·3 per cent.; area included in the second map, 1234 farms, of which 271 were tuberculous, or 21·9 per cent. It is therefore probable that the selected area shown represents fairly the total area. The advantage of selecting the western slopes of the Pennine Range is that all that region is exposed to very similar climatic conditions. A comparison of Tables V. and VI. leads one to the conclusion

TABLE VI.—*Proportion of Tuberculous Farms in Various Zones and at Various Altitudes. The Zones are grouped in this Table in the same way as in Table V.*

Latitudinal zones.	Longitudinal zones.	Altitude of the "One-square-mile" areas in each zone.								
		Squares below the 300-feet line and traversed by rivers.		Squares below the 300-feet contour line and not traversed by rivers.		Squares situated on the 300-feet contour line.		Squares situated above the 300-feet contour line. Total including squares situated above the 1000-feet line.		Squares above the 1000 feet line. (No. of farms transferred to the adjacent column.)
		Aggregate No. of farms.	Farms tuberculous (percentage).	Aggregate No. of farms.	Farms tuberculous (percentage).	Aggregate No. of farms.	Farms tuberculous (percentage).	Aggregate No. of farms.	Farms tuberculous (percentage).	Aggregate No. of farms.
IX.-X.	L, —, J, K, L	12	16·6	10	10·0	19	10·4	31	9·7	—
XI.	D, G, J, K, L									
XII.	F, G, I, J, K									
XIII.-XIV.	F, —, F, M	29	10·3	3	(33·3)	44	9·0	24	20·8	(1)
XV.	G, H, J, K, M, N									
XVI.	L									
XVII.	I, K, L, M									
XVIII.	K, L, M, N, O	17	6·0	39	23·0	16	18·7	30	10·0	—
XIX.	I, J, K, L, M, N, O									
XX.	I, J, K, L, M, N, O	18	33·3	39	30·7	—	—	56	21·4	(2)
XXI.	I, J, K, L, M, N, O	2	(50·0)	111	26·1	28	28·9	104	21·1	(6)
XXII.	B, F, G, H, I, J, K, L, M, N	11	27·2	101	40·0	47	30·0	86	23·2	(3)
XXIII.	F, G, H, I, J, K, L, M, N...	11	45·4	11	36·3	17	29·4	72	22·2	—
XXIV.	H, I, J, K, M, N, O	8	(25·0)	5	(0)	7	(28·5)	51	15·6	(6)
XXV.	H, I, J, K, M, N, O	3	(33·3)	23	17·3	4	(25·0)	48	22·9	—
XXVI.	H, I, J, K, L, N, O	12	(33·3)	11	18·1	3	(33·3)	35	20·0	—
XXVII.	H, I, K, L, M, O	—	—	7	(42·8)	2	(0)	27	7·4	—
Totals and averages		123	22·7	360	26·2	187	20·8	564	19·2	—
After excluding groups of less than 10 farms	Maxima ...	—	45·4	—	40·0	—	30·0	—	23·2	—
	Minima ...	—	6·0	—	10·0	—	9·0	—	7·4	—

that the greater prevalence of bovine tuberculosis in the districts situated south of Manchester cannot be due only to the effects of difference of altitude or of the dampness of the soil attributable to the neighbourhood of rivers. The average percentage of tuberculous farms was:—

On or near the banks of rivers	22·7
On lands at a level not exceeding 300 feet	26·2
On lands at a level of 300 feet	20·8
On lands at a level of 300 to 1000 feet	19·2

The differences between the extremes of this series are small compared with the difference between 10·5 per cent. in northern Lancashire and the adjacent Yorkshire districts, and 29·7 per cent. in a region south of Manchester. The farms situated above the 300-feet line are apparently less liable to tuberculosis than the farms situated below that line, but the difference between 21·3 per cent. and 19·2 per cent., which indicate respectively the average number of tuberculous farms for the whole area and for the farms situated on high grounds, is not very great. A closer examination of the results recorded in Table VI. shows still more clearly that the influence of the difference of altitude under consideration is not a dominant factor. If one excludes from consideration the groups consisting of less than ten farms, it will be found that in each altitude there are groups that are comparatively free, while others are extensively affected. The differences between the minima and the maxima relating to each altitude are considerable. Thus, the least affected group of farms (6 per cent.) is found among those situated near the banks of rivers, but in the same category is also found the group showing the highest percentage of tuberculous farms—45·4. The same contrasts are observed in all categories. It is interesting to note that the maxima indicate the same tendency to improvement as the altitude increases as is shown by the averages. It is, however, quite clear that some more powerful influence than that of situation must be found to explain the great differences which I have indicated.

6. *Influence of the State of the Cowshed and Herds.*

Much has been said of the share taken in the spread of tuberculosis by badly constructed, small, ill-ventilated, and otherwise insanitary shippons, of the liability to tuberculosis of certain breeds of cattle, of the pernicious influence of "close breeding for high milking," of the effects of heredity, &c. Although very strong opinions have been expressed by practical and other men upon each of these points, it is difficult, not to say impossible, to discover any *satisfactory record of facts* in their support.

In the hope of obtaining more definite information I asked Mr. Brittlebank to give me certain particulars regarding some 400 farms inspected by him. The particulars asked for were the following. State, age, construction, sanitation, cubic capacity, ventilation, cleanliness of cowshed; number of cows kept; how much kept in the open; special breed; state of cows; how long kept on the farm; average age; stability of stock; precautions taken to avoid the introduction of diseased animals; arrangements for dealing with diseased animals and preventing the spread of disease.

I was aware of the difficulty of obtaining definite or accurate answers to many of the questions included in my schedule, but I thought it desirable to ascertain to what an extent attention was paid to the various conditions which might affect the health of the cattle. It may at once be said that several of my questions remained unanswered for the simple reason that they referred to matters which, generally speaking, had not received proper attention from the farmer. Thus there is no evidence that, apart from reliance on general appearances and judgment based upon practical experience, farmers adopt, as a rule, any *reliable method to avoid the introduction of diseased animals among their herds*, or that they make, of their own accord, *systematic provision for the isolation or disposal of tuberculous animals*. It appears also difficult to obtain very reliable information with regard to the *average age or stability of stock;* this information would have been easily obtained if farmers generally made it a practice to replace animals that had reached a certain age. Very little information capable of forming a reliable basis for generalisation could be obtained regarding the *amount of outdoor life* allowed to cattle in various districts. On some farms cattle are kept in the open as much as possible, but I have so little information regarding the majority of farms that it is not possible to estimate how far the practice influences the incidence of tuberculosis. The keeping of cows in the open all the summer and whenever the weather permits is certainly not sufficient to prevent the occurrence of tuberculosis, for I have clear statements regarding ten farms where the practice was adopted, and in seven of these farms tuberculosis of the udder was observed. On two of these tuberculosis of the udder was detected twice. There were altogether 125 cows on these seven tuberculous farms, and among these cows eight cases of tuberculous mastitis were clearly demonstrated; two probable cases escaped detection. Of these seven farms, three were quite satisfactory from a sanitary point of view, one was moderately good, and three were bad.

With regard to the *breed*, there is nothing in the evidence at my disposal indicating that the prevalence of tuberculosis in any district had any relation to the breed of cattle. On the great majority of farms all through the area the herds were composed of animals of various breeds.

In the case of 26 tuberculous farms there is a clear statement that the whole or part of the cattle were *home bred*. This is sufficient to prove that the practice is not uncommon, but I have no means of ascertaining whether there was any difference in that respect between tuberculous and non-tuberculous farms. With regard to the *general state of shippons*, their *ventilation* and *cleanliness*, the *general state of the cows*, and their *approximate age*, I have somewhat more complete information. In most cases this information is in the form of an expression of opinion, but, the opinion being that of an experienced veterinary surgeon (Mr. Brittlebank), and generally based on repeated inspection, it is probably more reliable than records of figures collected by less reliable observers. Moreover, it was only after obtaining the whole of the information about farms, not arranged in any definite order, that I classified all the facts, so that no preconceived idea could have materially influenced the record.

Out of 397 schedules relating to an equal number of farms I had to exclude 12 which were too incomplete to be of any use. This left 385 farms available for the purpose of the investigation. Of the 9283 cows on these farms, 1017 have been found to show some evidence or other of abnormal conditions of the udder, and 287 have been proved to be actually suffering from tuberculous mastitis. These results refer to the years 1896 to 1909, during which each of the 397 farms has been inspected more or less continuously during periods ranging from two to 12 years.[5]

In estimating the proportion of infected animals it is important to keep in mind the fact that during a period of 12 years the dairy stock of many farms had been entirely renewed. Even in the case of farms which have been inspected during shorter periods it is probable that the composition of the stock was not exactly the same at the beginning as at the end of the period. This want of stability, and the different practices adopted with regard to the renewal of old stock, make it impossible to estimate exactly the case incidence of tuberculous mastitis. The estimate of the proportion of infected farms is not vitiated to the same extent by the movements of the stock, although it is obvious that the chances of infection by the occasional introduction of tuberculous animals are increased when animals are frequently bought and sold. On the other hand, it is well to remember that when cows are allowed to age on an infected farm the proportion of tuberculous animals increases with the age of the stock.

I have published elsewhere statistics relating to several herds in which I found that less than 50 per cent. of the cows under five years were affected with tuberculosis, while more than 50 per cent. of the cows above five years of age were affected with tuberculosis. These statistics were based upon the results of the testing of 362 cows with tuberculin, confirmed by post-mortem examination in every case.[6] Whatever may be the disturbing influences of these various irregularities, it is obvious that if the situation of the farm, the state of the shippon, and the general condition of the animals, have a material influence upon the prevalence of tuberculosis, this should appear clearly when the characters

[5] The periods during which the farms were inspected are as follows: 1 to 2 years, 153 farms; 3 to 4 years, 81; 5 to 6 years, 49; 7 to 8 years, 56; 9 to 10 years, 41; and 11 to 12 years, 17—giving a total of 397 farms.

[6] Report of the Medical Officer to the Local Government Board, 1908-09, pp. 403-9.

of the farms which have been found free from tuberculosis are compared with those of the tuberculous farms.

To facilitate this comparison I have tabulated the information at my disposal as follows. I have divided all the farms into two groups: (*a*) Farms on which no tuberculous udders have been found; and (*b*) farms where tuberculous udders have been found. The farms (77) included in Group *A*, not being sufficiently numerous for subdivision into many latitudinal groups, have been divided into two divisions, the first corresponding to latitudinal Zones III. to XIX., and including the Manchester farms with the exception of the suburban farms on the south of the city. The second division corresponds to latitudinal Zones XX. to XXXI., and includes all the farms situated south of Manchester. The number of farms (385) included in Group *B* was large enough to be subdivided into five divisions. The first division of this group (III. to XIX.) corresponds exactly to the first division of Group *A*, and includes all the Manchester farms and those situated north of Manchester. It also corresponds to the three upper divisions in Table VI. The other four divisions correspond to the nine lower divisions in Table VI., and comprise all the farms south of Manchester, including the southern suburban farms. The data relating to the farms situated in each of the divisions are classified as follows:—

(I.) *State of the cowshed* as indicated by (1) general condition of the buildings; (2) cubic space and ventilation under the head of ventilation; (3) cleanliness.

(II.) *State of the cows:* (1) approximate age; (2) general health and nutrition, generally spoken of as condition of the animals.

(III.) *Number of cows* on the farm.

(IV.) *Number of cows showing some sign of disease of the udder.*

(V.) *Number of cows proved to be affected with tuberculous mastitis.*

In order to indicate the state of the shippon and of the stock, I adopted the following device. The state of things recorded under each question in the schedules was classified under three heads: (1) Very good, good, or satisfactory; (2) fair, moderate, or indifferent; (3) very bad, bad, unsatisfactory, or poor. This classification was not practicable with regard to the age, which I grouped as follows: Young or under 5; uncertain or middle-aged, or mixed when the proportion was not given; old, or over 8 years. Old does not, of course, mean that all the cows kept in the shippon were old, but that many were.

Having thus ascertained for each category the proportion of shippons that were unsatisfactory or bad beyond doubt, I found the proportion existing between these unsatisfactory shippons and the total number of shippons available for the study of each special feature. The shippons with regard to which I had no clear information, either good or bad, were excluded. The results of this part of the investigation are summarised in Table VII. Before proceeding to a discussion of the meaning of the facts recorded in Table VII., I must explain that the shippons included in the latitudinal Zones III. to XIX. in Groups *A* and *B* are almost all situated in Manchester or in the immediate neighbourhood of the town, and that they are those remaining after a great number of unsatisfactory shippons had been closed during the first years of the period under consideration. These farms are, therefore, selected farms; moreover, most of them have been improved under the supervision of the Health Department.

With the exception of some farms in Zone XX., very few of the other farms included in the table were so completely under the control of the authority. The contrast between the two classes of farms is well shown by the two Divisions III. to XIX. and XX. to XXXI., in Group *A* (non-tuberculous farms); the contrast is also evident when Division III. to XIX. is compared with the four Divisions XX. to XXXI. in Group *B* (tuberculous farms). The averages for *A* and *B* are distinctly affected by the improved state of these farms. An idea of their original state may, however, be gathered from the figures showing the number of cows, the udders of which were under suspicion when the farms were first examined.

TABLE VII.—*Relations between the State of the Shippon, the Condition and Number of Cows, and the Prevalence of Tuberculous Mastitis.*

Farms grouped according to the presence or absence of tuberculous mastitis between 1896 and 1909.	Latitudinal zones.	(I.) State of the cowsheds.									(II.) State of the cows.						(III.) No. of cows on farm.		(IV.) No. of cows showing some sign of disease of the udder.*		(V.) No. of cows affected with tuberculous mastitis.*		No. of farms in each group.
		(1) General condition of the buildings.			(2) Ventilation.			(3) Cleanliness.			(1) Approximate age.			(2) General health and nutrition.									
		No. of cowsheds available.	No. of cowsheds bad.	Percentage.	No. of cowsheds available.	No. of cowsheds bad.	Percentage.	No. of cowsheds available.	No. of cowsheds bad.	Percentage.	No. of cowsheds available.	No. in which old cows numerous.	Percentage.	No. of cowsheds available.	No. in which state of cows bad.	Percentage.	Total No. of cows in each group.	Average No. of cows per farm.	Actual No.	Percentage.	Actual No.	Percentage.	
(*A*) Farms on which no tuberculous udders found.	III.–XIX.	38	3	7	38	2	5	38	1	2	37	1	2	38	0	0	595	15	43	7·2	—	—	38
	XX.–XXXI.	35	24	68	34	23	67	35	20	57	29	17	58	35	10	28	972	24	45	4·6	—	—	39
	Whole area, III.–XXXI.	73	27	37	72	25	34	73	21	28	66	18	27	73	10	13	1567	20	88	5·6	—	—	77
(*B*) Farms on which tuberculous udders have been found.	III.–XIX.	39	17	43	33	16	48	33	10	30	23	6	26	29	4	13	814	20	102	12	33	4	39
	XX.–XXI.	75	34	45	75	43	57	75	28	37	56	32	57	69	11	16	1848	22	266	14	84	4	82
	XXII.	71	37	52	69	37	53	70	38	54	57	27	47	67	13	19	2133	26	249	11	66	3	80
	XXIII.–XXIV.	58	47	81	58	46	79	58	43	74	41	27	65	55	16	29	1661	25	192	11	57	3·4	64
	XXV.–XXXI.	41	26	63	40	29	72	41	28	68	31	20	64	37	12	32	1260	29	130	10	47	3·8	43
	Whole area, III.–XXXI.	284	161	56	275	171	62	277	147	53	208	112	53	257	56	21	7716	25	939	12	287	3·7	308
Totals for all the farms.	... ...	357	—	—	347	—	—	350	—	—	274	—	—	330	—	—	9283	—	1017	—	287	—	385
(*C*) Farms belonging to various districts in which tuberculous udders were found more than once (twice in most cases)	III.–XXXI.	49	26	53	48	28	59	49	17	34	39	23	59	43	9	21	1164	23	259	22	75	6	—

* The figures given in these two columns refer only to the cases actually discovered. The proportion of cases of tuberculous mastitis detected in each group is given in Table V.

Some of the facts brought out by Table VII. may be summarised as follows :—

	Average state of farms and stock as indicated by the number of unsatisfactory shippons per cent. of the total available for comparison.	
	Shippons in which tuberculous udders were not found.	Shippons in which tuberculous udders were found.
Bad general condition of the building	37	56
Size and ventilation insufficient	34	62
Want of cleanliness	28	53
Many cows old	27	53
Bad condition of stock	13	21
Average number of cows with suspicious udders	5·6	12
Average number of cows with tuberculous udders...	0	3·7
Average number of cows per farm	20	25

It would appear from this that in every respect the shippons in which cows with tuberculous udders were found were worse than the others. But if, instead of comparing the averages only, one compares in each group the state of the tuberculous and non-tuberculous farms in various latitudinal zones, it becomes evident that the averages do not convey the whole truth, for if the non-tuberculous farms situated south of Manchester (Group A, Division XX. to XXXI.) are compared with the tuberculous farms also situated south of Manchester, one finds that the tuberculous farms in Zone III. to XIX., XX. to XXI., and XXII. are really more satisfactory than the non-tuberculous farms in Zone XX. to XXXI., and that it is only south of Zone XXII. that the tuberculous farms are worse in every respect than the non-tuberculous farms (not including the Manchester farms).

Another unexpected fact is obvious. Of the five divisions of tuberculous farms, the one corresponding to Zones XXIII. and XXIV. is undoubtedly the worst, while Division III. to XIX. is distinctly the best; but notwithstanding the considerable differences indicated in the table, the number of cows with tuberculous udders per cent. of the total number of cows is about the same in all the zones. The same may be said of the cows suspected of disease of the udder; there are slight differences, but these do not correspond in the least with the condition of the farms in the respective zones. I do not think that the differences in these percentages should be taken to indicate important differences in the incidence of tuberculosis, as they may possibly be the effect of the more frequent inspection of the proximal farms, which would almost certainly lead to the discovery of cases overlooked in the first visits. It is therefore clear that the condition of the farm, though important, is *not the dominant factor*, and that it is necessary to believe in the existence of some cause capable of overpowering the most favourable conditions, and practically independent of the most influential predisposing factors, to account for the focal distribution of cases of tuberculous mastitis.

7. *Actively and Potentially Infective Cases of Tuberculosis.*

A careful consideration of the statistical facts recorded in this paper, and of facts which I have observed in connexion with a number of farms that I have been able to study closely, has led me to the conclusion that cows in a state of advanced tuberculosis, and *emitting discharges loaded with tubercle bacilli*, constitute the chief factor determining the distribution of bovine tuberculosis. The number of cows suffering from tuberculosis is so great that there are very few farms that are entirely free from tuberculosis, but so long as the tuberculous lesions are confined to the serous membranes, bones, lymphatic glands, or viscera, and have not ulcerated, *they retain their bacilli*. Cows affected with these closed lesions, though potentially infective, are not important sources of infection. When, however, the disease has given rise to ulcerative lesions of the lungs, alimentary passages, genito-urinary passages, or udder, products containing tubercle bacilli are discharged by the animal, the surroundings of which become rapidly infected. As the disease advances there comes a stage when the quantity of tubercle bacilli so discharged is inconceivable. To obtain some information upon this point I have carefully watched a cow affected with pulmonary tuberculosis. For more than six months before its death it had a troublesome cough and at times expectorated some muco-purulent discharge; this was not, however, a conspicuous feature of the case. For four months the milk obtained from two quarters of its udder was loaded with tubercle bacilli, and during the first two out of these four months the supply was abundant. After a time a third quarter began to secrete tuberculous milk. One month before it was killed this cow begun to suffer from incoercible diarrhœa, which continued till its death. The quantity of fluid fæcal discharge evacuated by this cow was considerable, and yet almost every drop of this fluid was loaded with tubercle bacilli. The whole floor of the shippon was either covered or splashed over with this fluid, and, if I had not prevented it, the litter soaked with this tuberculous material would have been thrown upon the adjacent pasture land on which other cows were grazing. I have not measured exactly the amount of fluid fæces evacuated by this cow, but estimated roughly that the amount exceeded one gallon a day. It is easy to conceive how the presence of such a cow in a herd even for a period of a few weeks would be sufficient to infect both shippon and pastures to an extraordinary extent. In a well-kept farm such a cow would probably be isolated fairly early, but not before some mischief had been done. In a spacious, well-ventilated, clean shippon tuberculous discharges would probably not be allowed to accumulate and to contaminate to a very material extent the food or litter of the other cows. In a badly constructed, ill-ventilated, dirty shippon infection would be practically certain. But whether the shippon was clean or dirty it is probable that no precautions would be taken with regard to the litter and washings from the shippon, and that considerable quantities of manure would be infected by admixture with this material. Apart from this, the cow might infect pastures directly, and this infection would persist for a considerable time. It is generally known that desiccation or putrefaction does not affect the vitality or virulence of the tubercle bacillus for weeks and months. I have made an experiment which proves that seropurulent discharge from a tuberculous udder *kept for 19 months* (part of the time at the ordinary external temperature, but mostly at temperatures varying between − 4° C. and + 6° C.) was still virulent at the end of that period. This milk had been left in the bottle in which it had been originally collected, and it contained other bacteria than the tubercle bacillus. The tubercle bacilli had retained their usual characters and reactions, and their virulence was not very materially diminished. They gave rise to very extensive lesions in inoculated animals.

The extraordinary masses of bacilli which can be emitted by a cow in a state of actively infective tuberculosis, and the great resistance of the tubercle bacilli, whether they be contained in dry or moist products, are, I think, sufficient to explain the comparative independence of tuberculous infection from predisposing causes. I say comparative, because I do not wish it to be inferred that predisposing causes are without effect: I have given evidence to the contrary. I was so convinced in 1897 of the effects of infection of shippons and pastures by cases of advanced tuberculosis that in conducting the Ford Bank experiment[7] I began by eliminating all cases of advanced tuberculosis, separating from reacting cows all the animals that did not react with tuberculin, housing them in sheds that had been thoroughly disinfected, and not allowing these animals to graze in pastures that had already been used by tuberculous animals. New stock that had not yet passed the tuberculin test twice was not allowed to mix with these sound cows. In this way I cleared from tuberculosis a herd of 27 head of cattle in one year, and no fresh case occurred during a second year, although over 61 per cent. of the original stock were tuberculous. The same method has been used since under the supervision of Mr. Brittlebank at a large farm (129 cows) supplying milk to the hospitals under the Manchester corporation. This farm has now been kept free from tuberculosis for several years.

[7] The Stamping-out of Bovine Tuberculosis, Transactions of the British Congress on Tuberculosis, 1902.

I am convinced that the success of the work done by the Manchester sanitary committee for reducing the amount of tuberculous milk supplied to the town is mostly due to the removal of actively infective cows and to a diffusion of the knowledge of the danger connected with the keeping of diseased old cows.

8. *General Conclusions.*

The evidence analysed above, though incomplete, is, I believe, the best available at the present time for the purpose of estimating the causes of the unequal distribution of bovine tuberculosis. Notwithstanding the incompleteness of my data, I believe that certain conclusions can be based on them, and I think that anyone willing to take the trouble of considering fully the facts collected in this communication will find it difficult to come to other conclusions without neglecting some of the facts. If I am mistaken, there shall still remain to me the consoling thought that I have brought together a number of facts that cannot fail to prove useful to others interested in the prevention of tuberculosis.

There might be some justification for my taking this opportunity to insist once more upon the advisability of adopting the thorough measures which I have advocated during the last 14 years for stamping out bovine tuberculosis. I think, however, that it is undesirable to lengthen this communication.

The evidence obtained so far shows that bovine tuberculosis is, on an average, more prevalent in districts where shippons are generally in a bad state, small or badly ventilated and dirty, and where also it is the usual practice to retain many aged cows on the farms. It is, however, equally clear that there are districts where the farms exhibit all the defects above mentioned, and yet have remained free from tuberculous mastitis; on the other hand, there are districts in which the farms were free from these defects, and where many cases of tuberculous mastitis have been observed.

It does not therefore appear safe, under the present conditions, to rely chiefly upon ordinary sanitary measures for the purpose of controlling bovine tuberculosis. The frequent, partial or complete, failure of ordinary sanitary measures indicates that the action of the infective material is more or less independent of these measures, because it is at times either very abundant or very virulent. There was no reason to believe that the virulence of the tubercle bacillus was materially affected by the localities investigated, but I have shown that cows with ulcerating lesions—i.e., cows in the *actively infective stage* of tuberculosis—are capable of emitting, and do emit, an extraordinary number of tubercle bacilli. From this I am led to the conclusion that *bovine animals suffering from ulcerative tuberculous lesions, more especially of the respiratory organs, alimentary canal, genito-urinary organs and udder, constitute the chief factor determining the prevalence of bovine tuberculosis.* This conclusion indicates the great importance of *inspecting every animal*, of removing without delay all those that are actively infective, and of not allowing healthy animals to remain in places that have been infected, so long as these places have not been treated so as to remove as far as practicable the dangers of infection. All animals affected with tuberculosis are potentially dangerous, and as their age advances the chances of their becoming actively dangerous increases; it is therefore desirable, so long as bovine tuberculosis has not been stamped out, to reduce as much as possible the number of old animals.

I hardly need to attract your attention to the bearings which these conclusions have upon the control of human tuberculosis. The importance of the removal of infective cases of tuberculosis indicates the desirability of segregating cases of advanced tuberculosis.[8] These cases are generally actively infective, and I am inclined to believe that more could be done towards the future control of human tuberculosis by providing suitable homes for infective cases than by the treatment of early cases. Both things are good, but prevention would ultimately render treatment unnecessary and prevent an amount of suffering that treatment can only reduce. The provision of means of treatment should not interfere with the provision of means of prevention.

[8] "It is obvious that segregation is necessary only when patients are unable, owing to their circumstances or education, to understand and to observe the precautions which they must take to protect their neighbours. I need not say that I am not an advocate of harsh measures of segregation. I have previously advanced the same views in an address delivered before the North-Western Branch of the Society of Medical Officers of Health."—Public Health, April, 1899.

A CASE OF BLACKWATER FEVER.

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So many persons develop blackwater fever at home within a few days or months after returning from malarious countries, especially the West Coast of Africa, and the attacks so often supervene in out-of-the-way places, where practitioners have but few opportunities of treating tropical affections, that these notes, while presenting some points of interest to those specially engaged in the study of tropical diseases, may also prove useful to others unexpectedly called upon to treat a patient suffering from this disease.

On Jan. 7th, 1909, I was asked to see the case by a practitioner in Edinburgh, who had recognised its serious nature.

Previous history.—When first seen the patient was in too grave a condition to give a very clear account of his previous health, but since recovery he has furnished me with the necessary information. In 1907 he was appointed to the Colonial Medical Service and sent out to the West Coast of Africa, arriving there on Sept. 1st, 1907. Previous to this he had never been abroad. He commenced taking quinine in 10-grain doses as a prophylactic measure twice a week, though with some want of regularity. About six months after arrival he had a slight attack of malaria, which only lasted one day. This was followed by a similar attack in a fortnight and a third a few days later. After this he took 5 grains of quinine every day and was free from malaria during the remainder of his service in Africa.

The patient returned to England in September, 1908, and in about a fortnight discontinued taking quinine. In the month of November, while a student at the London School of Tropical Medicine, he suffered one day from feverish symptoms, and on examining his blood found a few ring forms of the malignant parasite. The next day he felt quite well and was able to resume work. He recommenced taking quinine and continued to do so for a month. The patient admits that at this time he was not wearing sufficient warm clothing.

On Dec. 29th, 1908, the patient came to Edinburgh, and during the following week attended various evening functions. The weather at this time was extremely cold, and on several occasions he experienced sensations of chill. On Jan. 6th, feeling all the symptoms of an impending attack of fever, he took a large dose of sulphate of quinine. At 9 P.M. he had a rigor, followed by another at 11 P.M. Shortly afterwards his urine was noticed to be of a dark port-wine colour. The temperature was 104° F. and the pulse 108. On the 7th (the second day) the temperature was 104° and the pulse 92. There was another severe rigor in the early morning. He complained of excessive nausea, there was occasional vomiting, and there were pains in the back. The urine was of port-wine colour; it contained no urobilin or bile pigments, but a few red corpuscles and granular casts were present. Spectroscopic examination showed the presence of methæmoglobin. On examination of the blood it was found that the red cells numbered 2,056,000 per cubic millimetre; the hæmoglobin was 46 per cent. The differential count of the leucocytes showed: polymorphs, 70 per cent.; small lymphocytes, 9 per cent.; and mononuclears, 21 per cent. Many transitional forms were seen. Long and careful examination failed to reveal the presence of malarial parasites. The red cells were normal in shape but were somewhat pale.

On Jan. 8th (the third day) the patient had passed a restless night. The temperature was 102° and the pulse 86. On the 9th (the fourth day) there had been continuous nausea and vomiting during the night. The patient looked very distressed, and the whole body surface was of a bright yellow colour. The temperature was 99° and the pulse 80, very weak. In the evening the temperature was normal and the pulse 80. No sickness had taken place since midday, and the urine was almost clear. On the 10th (the fifth day) the morning temperature was 99° and the pulse 80. The urine was again somewhat dark in colour. The evening temperature was 100°. On the 11th (the sixth day) the temperature was 99° and the pulse 86. The urine was of a clear straw colour.

On the 12th (the seventh day) it was noted that during the night the temperature rose to 101°, but the patient slept some hours. The blood count was as follows: white cells, 28,000 per cubic millimetre; polymorphs, 60 per cent.; lymphocytes, 27 per cent.; and mononuclears, 13 per cent. One megaloblast was seen. From this date he slowly improved. On the 25th (19 days after the onset) the red cells numbered 3,280,000 per cubic millimetre, and the hæmoglobin was 70 per cent. A differential count was practically normal. On Feb. 3rd, however, he complained of having spent a restless night, and the temperature was found to be 102°. Examination of the blood showed a few ring forms of the malignant parasite. Next day the temperature was normal, and he made a slow but perfect recovery. In a letter recently received he says: "My malaria must be cured, as I have not had any fever during the last 12 months."

Without entering into the vexed question of the etiology of this disease, it may be claimed that the case under notice is one of the many which show that residence in an unhealthy climate—with repeated serious attacks of malaria—is not a necessary condition in the causation of the disease; or to quote the words of Whipple,[1] "the amount of latent malaria has no relation to the disease." This patient was only in Africa one year, and the two or three attacks from which he suffered during this period were so slight that he never spent a whole day in bed.

Regarding the reputed influence of quinine in setting up an attack, it is to be noted that, having felt out of sorts for two or three days, during which time he was probably suffering from fever, the patient took a large dose of sulphate of quinine on Jan. 6th, and developed a high temperature with hæmoglobinuria in a few hours. On previous occasions the administration of quinine had cut short the attacks of fever, and it is impossible to avoid thinking that repeated chills and the large dose of quinine were the active agents in the production of hæmolysis.

Treatment.—To give or not to give quinine is a point on which there is much difference of opinion among those who, from their extensive knowledge of this affection, are well qualified to form an opinion. On the one hand are those who, believing the condition to be simply a severe form of malaria, advocate the administration of quinine in large doses throughout the attack. On the other hand are those who consider that in most cases quinine is the active agent in causing hæmolysis, and either abstain altogether from giving quinine or use it in very small doses.

The safest and most rational method of treatment is found between the two extremes, according to the following rules: 1. If malarial parasites are found in the blood quinine should be administered. 2. If the parasite is not found in the blood, or if there is any doubt, as, for example, where microscopic examination is impracticable, do not give quinine. Following these rules in the case under notice, as examination of the blood for the malarial parasite proved negative, quinine was withheld.

When, however, it is considered necessary to administer quinine there are certain important points to be considered. The first of these is the choice of a suitable preparation. It has been shown that the ordinary sulphate of quinine often produces hæmoglobinuria, and therefore it should never be used in this affection, the hydrobromate or di-hydrochloride being preferable.

Another point is the dosage. Some recommend large doses—10–15 grains repeated every four hours—but to avoid the possible danger of increasing the severity of the symptoms by these large doses it is better to administer it by the fractional method.

As above stated, this patient developed acute malaria 28 days after the onset of the blackwater fever. Parasites being present in the blood, quinine could not be withheld, but as it was considered the original large dose of sulphate of quinine had probably caused an injurious effect the hydrobromate was employed in fractional doses, 2 grains every two hours; by the next day the parasites had disappeared from the blood and the temperature was normal.

Setting aside the question of quinine, it is generally acknowledged that treatment must be directed to: (1) Flushing the blocked tubules of the kidney and promoting a satisfactory flow of urine; (2) treating other symptoms as they arise; and (3) maintaining the strength of the patient.

Past experience, and the results obtained by the latest research workers on this subject[2] show that the chief pathological condition in the kidney is a mechanical blocking of the tubules by the broken-down hæmoglobin thrown out of circulation. Clinically, suppression of urine is most to be feared. The rational treatment, then, is the one which was adopted in this case—e.g., allowing the patient to take large quantities of diluents—weak tea, coffee, milk with soda-water, &c.; in addition, Sternberg's mixture was used, and later weak solutions of boric acid.

A grave and distressing symptom is the persistent nausea and vomiting; in this case it was so severe that on the fourth day of the disease it appeared likely to bring about a fatal result. The ordinary methods of treatment—sinapisms, ice, champagne, &c.—had been used without the least benefit, but absolute relief was obtained within an hour by the application of liquor epispasticus over the line of the vagus in the left side of the neck. This method of treatment, which is frequently employed in tropical countries in cases of cholera, post chloroform sickness, and other conditions in which rapid and powerful counter-irritation of the vagus is desired, does not appear to have received at home the recognition it deserves. The results in my experience have been so highly satisfactory that I would strongly recommend it as worthy of trial in other forms of persistent vomiting which resist ordinary treatment.

To combat the tendency to heart failure, digitalis or strophanthus may be used, but caffeine and hypodermic injections of strychnine are to be preferred, and were employed in this case. Pain in the loins and hepatic region was relieved by the application of hot fomentations, while free action of the bowels was maintained by enemata and aperients. The disease is seldom associated with hyperpyrexia; in any case the use of antipyretics is to be avoided; and it has been recorded that on several occasions the administration of pilocarpine, with a view to promote diaphoresis, has been followed by a fatal result.

Prophylaxis.—Whatever views may be held regarding the active agents in the causation of this disease, it is generally acknowledged that "chill" is one of the most important factors. Most of the cases we see at home are found to be connected, as in this case, with the use of insufficient clothing. It is not surprising to find men who have previously suffered from malaria arriving at home during the winter from tropical countries, provided with only the lightest underwear, developing malaria or blackwater fever. It is the duty of all medical officers in tropical climates to give their patients advice on this point.

Should a person who has suffered from blackwater fever be permitted to return to a malarious country? This is a question which often demands the most serious consideration. An authority on this subject[3] has stated that, in his opinion, a man who has survived three attacks of this disease is practically immune (I have at present under treatment a man who has had two attacks in India), but as the all-round mortality is nearly 30 per cent. the chances of recovery from a second or third attack are so slight that, though in some cases where, for example, the livelihood of the patient absolutely demands it he may be allowed to run the risk, the rule should be that a person who has once suffered from blackwater fever should not remain in, or return to, a country where the disease is prevalent.

In the description of this case, detailed reference to the voluminous literature on the subject has been purposely avoided. Men working in tropical countries cannot overburden themselves with books; but at the same time they often ask to be furnished with information regarding the publications it is desirable for them to obtain. The two books to which reference has specially been made should be in the hands of all medical men practising in countries where blackwater fever is prevalent. Védy's monograph is a unique record of extensive clinical work; while in their book just published Barratt and Yorke give the results of a careful scientific investigation regarding the etiology of the disease.

Edinburgh.

[1] Malaria, 1909.

[2] Barratt and Warrington Yorke: An Investigation into the Mechanism of Production of Blackwater Fever. Liverpool University Press, 1909.

[3] Dr. Louis Védy: La Fièvre Bilieuse Hémoglobinurique dans le Bassin du Congo. Paris: A. Maloine.

DEATH FROM PERFORATION OF THE AORTA BY A HALFPENNY IMPACTED IN THE ŒSOPHAGUS.

WITH REMARKS ON SOME SIMILAR CASES.

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THE patient was a boy, 4 years of age, the son of working people. On June 5th, 1906, he went to buy sweets with a halfpenny which his mother had given him, and while in the shop he startled the customers by shouting out that he had swallowed the coin. At the time efforts were made to recover it by the introduction of the fingers, making the child vomit, &c. Medical assistance was obtained, but the X rays were not employed, nor was any endeavour made to remove the coin by instrumentation. The fæces were carefully searched for a month without any sign of the coin, but it was, nevertheless, supposed to have been voided.

On the night of the accident, and for a day or two afterwards, the child complained of pain about the pit of the stomach, but this then disappeared and did not return either in that situation or elsewhere. For a couple of weeks afterwards the child had sore-throat and difficulty in swallowing, but this also gradually disappeared, although ever after the accident he had a tendency to regurgitate a bite or two with phlegm, though he usually took food without trouble. There was never any blood until the fatal illness. About the time that the dysphagia disappeared he began to be troubled with a severe cough and difficulty in breathing coming on in attacks during the day, though at night he rested very well. The cough was attributed to enlarged tonsils and weakness of the chest, especially as the child took cold very readily, but these troubles gradually diminished as the child got older.

This was the state of affairs up to April 15th, 1908, when the patient first began to vomit blood, just one year and ten months from the date of the accident. On that day (a Wednesday) the child had tea at 4 o'clock; at 6 P.M. he vomited a little blood; and about a quarter of an hour later brought up a large quantity of dark red blood. After this he turned very white but did not faint. On Thursday about 3 A.M. and again at 4 A.M. he vomited a further quantity of blood, but after this there was no vomiting until Friday at 3.45 A.M., when he brought up a small quantity. On this day, about noon, he was admitted to the Newcastle Infirmary. The child was absolutely blanched, the tissue being œdematous from loss of blood. A screen examination with the X rays plainly showed the coin lodged in the œsophagus, but as it was quite clear that some large vessel—almost certainly the aorta—had been opened by ulceration, no attempt was made to remove it. On Saturday the boy vomited blood several times and there was also melæna until death took place at 9 P.M.—i.e., just 75 hours after the first sign of hæmorrhage.

At the necropsy the coin was found impacted transversely just at the level of the crossing of the left bronchus. Both sides of the œsophagus were ulcerated where the edges of the coin impinged, and on the left this process had extended into the aorta just beyond the origin of the left subclavian. On the right wall the ulceration was not so deep and the mucous membrane was hypertrophied around about it. The aperture viewed from the aortic side appeared as a round hole just large enough to admit a pin and surrounded by a rim of organised fibrin. The œsophagus and stomach were occupied by a large mass of blood clot and there was evidence of the extensive hæmorrhage in the whole of the alimentary canal. The illustration shows the state of the parts as found at the post-mortem examination.

Remarks.—It seems curious that the coin should have given rise to so little difficulty in swallowing during its long sojourn in the œsophagus, for the child was able to take his ordinary food and was well nourished. But in other instances the same curious fact has been observed, and very shortly after the above case came under my notice a girl, aged 5 years, was sent to the infirmary from the same district with a halfpenny impacted in the œsophagus where it had lain for 25 days. The patient vomited several times on the day of the accident and twice on the following day, but after that her only symptom was blinking and watering of the eyes on swallowing hard food. This coin was easily removed through the mouth with the "catcher." A woman, aged 42 years, who swallowed a plate of false teeth was able to take her ordinary food for three days with little difficulty.

Judging by the experience of casualty work in large hospitals, impaction of foreign bodies in the œsophagus is comparatively common; but I doubt if the serious possibilities associated with them are sufficiently realised, for during the last six years no less than five cases have come under my notice in which death has been due to perforation of the aorta by foreign bodies.

The parts showing the œsophagus and cardiac end of the stomach laid open from behind. The coin is seen lodged transversely, a mass of blood-clot occupying the œsophagus below it. The smaller illustration shows the perforation from the aortic side, the actual hole being surrounded by a ring of organised fibrin giving it the appearance of a rosette.

In the first case a man, aged 54 years, died from hæmorrhage and septic mediastinitis five days after a meal of rabbit, and at the post-mortem examination one of the bones was found projecting into the lumen of the aorta.[1]

In the second case a man, aged 40 years, died from profuse hæmatemesis seven days after having partaken of rabbit, and the post-mortem examination disclosed a recent perforation between the œsophagus and the aorta, and although no bone was actually found the state of the parts left no room for doubt as to what had occurred.[2]

In the third case a sailor, 22 years of age, died on the road to the infirmary. A week previously a fish bone stuck in his throat. He complained of discomfort, but continued to work until the day before death when he first vomited blood. At the post-mortem examination a "hake bone" was found perforating the aorta in exactly the same situation as in the other cases.[3]

The fourth case was the boy the subject of this communication; while a fifth, due to the perforation of the

[1] Durham University College of Medicine Gazette, vol. iv., No. 4, January, 1904.
[2] Ibid., vol. vi., No. 5, February, 1906.
[3] Not published.

aorta by a fish bone, was reported by Sir T. Oliver in 1909.[4]

During the same period a man, aged 43 years, died after the removal of a plate of teeth by posterior mediastinal œsophagotomy,[5] and another in consequence of the impaction of a tooth-plate in the pharynx. During the last three years my colleagues, Mr. W. G. Richardson and Mr. J. W. Leech, together with myself have each had successful cases of œsophagotomy for the removal of impacted tooth-plates.

In the near future I feel sure that in cases of doubt the œsophagoscope will prove of immense value in the surgery of foreign bodies.

Newcastle-upon-Tyne.

MODERN STATISTICAL METHODS.

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AND

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Introduction.

THE collection of facts and their systematic study is, and always must be, the foundation of every science. A man's experience, or clinical knowledge as it is called in medicine, consists in the observations which he has himself made, and is only of use to him in so far as the conclusions, consciously or unconsciously drawn, aid him in forming an opinion on a new set of phenomena when observed. In other words, he has observed the frequency with which one event is associated with another, and so judges the likelihood of a similar happening in like circumstances. But knowledge thus gained can neither be of full value to the student himself, nor be readily imparted to others unless systematised by means of proper statistical methods.

No one who has followed the discussion that has centred round the question of the efficacy of vaccination can but have been struck by the conflicting results claimed to have been drawn from the same set of figures. With few exceptions, neither side made legitimate use of the statistics. Had they been submitted to a critical analysis, as it is now understood, such divergent conclusions could not have worried our legislature, nor is it likely that so unsatisfactory a law as the recent Vaccination Act would have disfigured the Statute Book of Great Britain. Mere columns of figures, however correct they may be as records of facts, are both useless and dangerous if they are not scientifically analysed.

The object of the present paper is to give a brief and non-mathematical description of the newer statistical methods. No apology appears to be necessary for bringing this subject before medical readers at the present time. The terms and expressions of the subject are daily becoming of more frequent use, and the great importance of this branch of study is being more fully realised. Formulæ are the necessary shorthand of every science. For the purpose of describing the characteristics of any set of tabulated figures it is clear that expressions of some sort are required that will briefly give the greatest possible information. For instance, in dealing with the death-rate from any disease the common method of stating the "average age at death" is often not only insufficient but actually misleading. By the addition of a few simple expressions we can accurately give certain useful and important information about the statistics which enables their distribution to be clearly defined. To explain these terms and to show how they are used is the main object of this paper.

In order to make the subject intelligible to the non-mathematical reader we have kept all mathematical formulæ out of the text, but in places where it seemed that a little more information might be of help to anyone with mathematical interests we have appended notes outlining in brief the principles involved. There has been some difficulty in deciding how much could be excluded without rendering the paper too incomplete, but we hope sufficient has been said to fulfil the unambitious task that we have set ourselves. That the paper is totally inadequate for anyone who intends working practically at the subject we are well aware, and it is not intended for any such; but if it raises interest in this important branch of research in anyone hitherto unacquainted with it, and if it makes intelligible terms that will become more and more frequent in medical and biological literature we shall have attained our object.

To give a more or less connected account of our subject it is first necessary to show how events that are universally recognised as "chance occurrences" fall into definite order if a sufficient number of them are examined; and then it will be seen how statistical data assume corresponding regularity and fall under a similar law of distribution. The second division of the paper, dealing with correlation, has perhaps a more obvious use and will claim the attention of all medical readers. The work initiated by Galton and perfected by Karl Pearson has given us the means of expressing accurately the interdependence of two series of events. By the correct use of their methods we are able to make reliable deductions from the statistical data which experiments and observations afford. Thus the results of vaccination, antityphoid inoculation, &c., can be stated in such a manner as to show clearly what is the true value of these processes.

Theory of Probability.

The object of the theory of Probability is to obtain an accurate measure of the likelihood of the occurrence of events under conditions some of which are known and some unknown. Algebraically the probability of the occurrence of an event is expressed by a fraction, the numerator of which represents the number of ways in which the event can happen and the denominator the sum of the number of ways in which it can happen and in which it can fail. Thus, if a person holds one ticket in a lottery in which there are three prizes and seven blanks the number of ways in which the event—winning a prize—can happen is three and the number of ways in which it can fail is seven. The probability of his winning a prize is therefore 3/10. The probability of not winning a prize is 7/10. In popular language this is generally expressed by saying "the odds against winning a prize are 7 to 3."

The sum of the two probabilities, i.e., the probability of the event happening added to the probability of its failing, is unity. That this must be so is clear from the consideration that the chances of an event either happening or not happening is certainty, for it must from the premisses do either one or the other. The measure of the probability may vary from unity—which denotes absolute certainty of the occurrence—to zero, which means absolute certainty of its non-occurence.

If a coin be tossed the probability of a head turning up is ½, for the event can only happen in one way and fail in one way. Similarly, the probability of a tail is ½. If now two coins be tossed (Example 1) there are four possible results—viz., HH, HT, TH, TT, where the first letter is supposed to belong to one coin and the second to the other. There is therefore one result in which 2 heads may turn up, one in which 2 tails may turn up, and two results in which 1 head and 1 tail may turn up. The respective probabilities are therefore: no heads ¼, 1 head and 1 tail ¼ + ¼ = ½, 2 heads ¼. By following this line of argument it can be shown that if three coins be tossed the different possible results and their respective probabilities are as follows:—0 heads 1/8, 1 head 3/8, 2 heads 3/8, 3 heads 1/8. If 10[1] coins be thrown the

[4] Brit. Med. Jour., April 17th, 1909.

[5] This case, which has never been published, was under the care of Mr. Rutherford Morison, who has kindly allowed me to mention it. The man swallowed his teeth in July, 1901, but did not come under Mr. Morison's care until December, when he was wretchedly ill from semi-starvation and showed unmistakeable signs of perforation of the left bronchus. Gastrostomy was performed and later an unsuccessful attempt was made to remove the teeth by the stomach route. In February, 1903, the œsophagus was opened in the posterior mediastinum and the teeth extracted, but death occurred about 48 hours later. The post-mortem examination disclosed a large perforation into the bronchus, with extensive septic broncho-pneumonia and microscopic evidence of an older tuberculosis.

[1] The probabilities are given by the successive terms of the expansion of the binomial $(\frac{1}{2} + \frac{1}{2})^n$ where n = 2, 3, 10 in the examples given above.

different possible events and their respective probabilities are:—

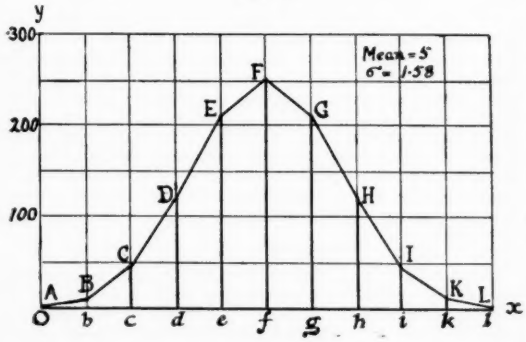
No of heads.	Probability.	No. of heads.	Probability.
0	1/1024	6	210/1024
1	10/1024	7	120/1024
2	45/1024	8	45/1024
3	120/1024	9	10/1024
4	210/1024	10	1/1024
5	252/1024		

On examining this table (Example 2) it will be seen that the most likely result is 5 heads and 5 tails, but that 4 heads and 6 tails and 4 tails and 6 heads are nearly as likely, while the other possible results are very much less frequent.

Looking at the subject from a somewhat different point of view, the result of throwing a coin a very large number of times will be to give approximately as many heads as tails, or to be quite accurate the difference between the number of heads and the number of tails will be negligible as compared with the total number of throws, when the latter is made sufficiently great. In the same way, if 10 coins be thrown a very large number of times the distribution of the various possible combinations will be approximately proportional to the probabilities given above. If, for example, 10 coins are thrown 1024 times there will be theoretically 1 case in which there are no heads, 10 cases in which there are 1 head and 9 tails, 45 cases in which there are 2 heads, and so on. This particular experiment has been actually carried out and the approximation to the theoretical result was, as we shall see later, very close.

We are now in a position to consider a method of representing graphically such results as these and we begin with example 2. On a piece of squared paper (Fig. 1) take a

FIG. 1.



point 0 and draw through it the horizontal and vertical lines $0x$ $0y$. Let successive points 0, b, c, d, &c., along $0x$ represent the successive cases in which there are respectively 0, 1, 2, &c., heads. Now along $0y$ measure off a distance 0 A = 1 on a convenient scale. Along the vertical through b measure on the same scale a distance 10 and along the vertical c measure a distance 45, and so on. By this means we get a series of points A, B, C, &c., whose distance from $0x$, $0y$ are respectively proportional to the number of heads turned up and the corresponding number of cases in which this occurs. If, now, these points be joined the resulting figure A, B, C, D, &c., is called a frequency polygon for this distribution of events. It is clear from the table of the figures that it is symmetrical about Ff.

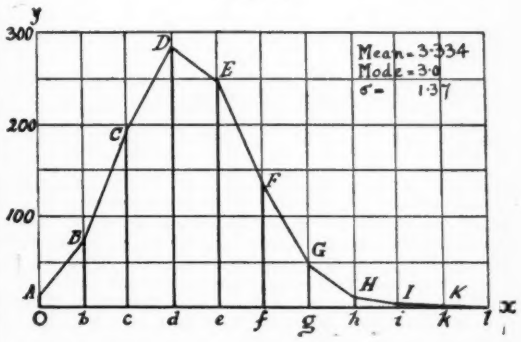
In order to show a somewhat different type of polygon another example, Example 3, is here given. The mathematical work by which the result is arrived at is omitted as being

No. of white balls.	Frequency.	No. of white balls.	Frequency.
0	112	7	102
1	725	8	15
2	1938	9	1
3	2819	10	0
4	2467		
5	1353		10,000
6	470		

rather complicated for this paper, though the general principles involved are the same as in the previous case. If from a bag containing 40 black and 20 white balls 10 balls be drawn at random these may be (1) all black, (2) 1 white and 9 black, (3) 2 white and 8 black, and so on. The actual numbers which would theoretically be obtained in 10,000 draws are given in the accompanying table.

It will be noted that, as a rule, there will be no draw of 10 white balls in the total of 10,000 draws. Theoretically, 10 white balls will be drawn only once in 400,000 draws, or but once in 40 of these experiments. If these figures be now plotted in the manner explained above the following polygon results (Fig. 2). It will be seen that the polygon differs

FIG. 2.



somewhat from the previous one, in that it is not symmetrical; the greatest ordinate is two spaces distant from the middle of the base and the polygon tails off to the right. In both examples the ordinates increase in size from left to right till they reach a maximum and then decline again till they almost vanish. The maximum ordinate represents the frequency of the particular arrangement which is most likely to occur. Thus, in Example 3 there are more likely to be 3 white and 7 black balls than any other combination. Nevertheless, if a sufficient number of trials is made all the different combinations will occur in perfectly definite proportions and will be distributed according to a definite mathematical law. While it is impossible to foretell what the result of any particular draw will be, we can predict the result of a large number of draws with an accuracy which depends solely on the magnitude of the number.

It is, perhaps, well to point out here that the rare event—as, for instance, the drawing of 10 white balls from the bag—is as essential a part of the mathematical law as is the frequent occurrence of the commoner or more likely events. If, therefore, in a large series of events we were to find that the rare event did not occur sufficiently often we should have just as much right to suspect some unrecognised factor in our experiment as we should if we found it occurring too frequently or if we found that the commonly expected event did not occur sufficiently often. This is a point that is often overlooked, more especially in the case of statistical data, but it is an important one to recollect.

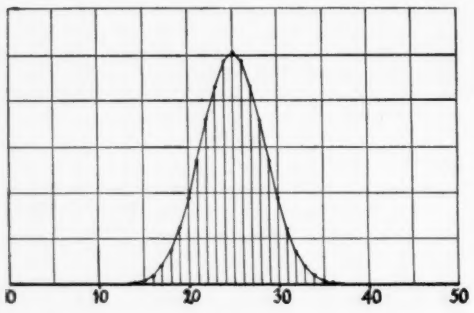
If an experimental result differs by more than a certain small amount[2] from what theory tells us it should do there must be some factor influencing the result which was not included in the known conditions of the problem—e.g., in the case we have been considering some irregularity in the shape of the coins or some difference in the size or weight of the balls.

It may be difficult for the reader to grasp the exact bearing of these examples on the practical problems of statistical work, but, as a matter of fact, it has been shown by much experimental research that a large variety of statistical numbers are of the nature of chance distributions and fall into various types of polygons (and curves) of a kind similar to those given above. It is only by studying the simpler forms that the more complicated types which occur practically can be understood. The polygons of Examples 2 and 3 are both 10-sided. If we threw 50 coins instead of 10 and plotted the resulting distribution we should get a 50-sided figure. This has been done in Fig. 3, and it becomes clear

[2] This amount is known as the "probable error" and will be discussed later.

that when the number of sides is so far increased the polygon approximates very closely to a continuous curve. It would, in fact, be very easy to draw a continuous curve through

FIG. 3.



the angles of this polygon.[3] Such a curve is known as a "frequency curve"; and one of the chief problems in this branch of statistical work is that of fitting such a curve to a given polygon, thus smoothing out the irregularities of the polygon, which, owing to the smallness of the data, will not be regular like the theoretical examples given.

We proceed now to study more closely the nature of these polygons and begin by defining certain terms which have an important bearing on their practical application.

The *mode* of a frequency curve or polygon is the abscissa of its greatest ordinate—i.e., it is the numerical value of the combination or the events which occur more frequently than any other. In Example 2 the mode is 0f = 5, the number of heads which turns up more frequently than any other. In Example 3 it is 0d = 3, or the number of white balls which is drawn more often than any other.

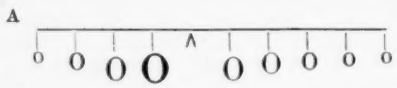
The *mean* of a frequency polygon corresponds to the abscissa of the centre of gravity of the figure; in other words, it is the average of the abscissæ of all cases. Thus in Ex. 2 there is one case whose abscissa is 0, 10 cases whose abscissa is 1, 45 whose abscissa is 2, &c., the mean is therefore

$$\frac{1 \times 0 + 10 \times 1 + 45 \times 2 + \ldots}{1 + 10 + 45 \ldots} .$$

This works out at 5, and the mean therefore coincides with the mode as it must do in a symmetrical polygon. In Example 3 the mean is—

$$\frac{112 \times 0 + 725 \times 1 + 1938 \times 2 + \ldots}{10{,}000} = 3{\cdot}334,$$

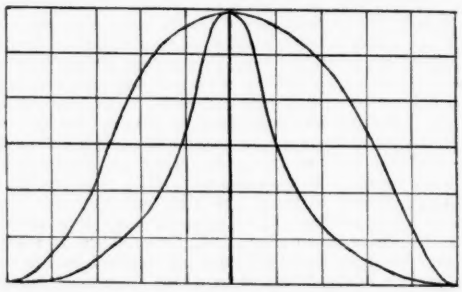
and it extends, therefore, to the right of the mode. A clearer conception of the mean may perhaps be obtained from a simile given by K. Pearson. Suppose on a light uniform straight rod, A B, weights are hung at equal distances, the weights being proportional to the frequencies of the various events—i.e., proportional to the ordinates of the frequency polygon. The centre of gravity of the rod thus weighted is the position of the mean and is clearly not necessarily coincident with the position of the greatest weight—the mode.



While the terms "mode" and "mean" are strictly defined as abscissæ—i.e., as *lines* measured from the origin along the axis of x—it is sometimes convenient to speak of the *points* where these lines terminate as the position of the mode or mean. Thus in Example 3 it is common to say that the mode is at 3, and the mean is at 3·334.

We require now to find a quantity which will give us a numerical measure of the extent to which a distribution is spread out. If the two polygons in Fig. 4 be compared it is apparent that while their means may coincide, one is much more spread out than the other—that is, its distribution has a greater deviation from the mean. The numerical measure of this spreading out is called the *Standard Deviation*, and is defined as "the square root of the mean of the squares of all the individual deviations." If it be denoted by σ, then σ is found by summing the frequencies of the events multiplied by the squares of their distances from

FIG. 4.



the mean, dividing by the total frequency, and extracting the square root. Thus in Example 2, $\sigma = 1{\cdot}58$ and in Example 3, $\sigma^2 = \frac{112 \times (3{\cdot}334)^2 + 725 \times (2{\cdot}334)^2 + \ldots}{112 + 725 + \ldots .}$ $= 1{\cdot}88$, $\therefore \sigma = 1{\cdot}37$. An extension of the illustration used above for the mean will probably give a clearer conception of this measure. Let the weighted rod be made to swing about the centre of gravity. The more closely the mass is concentrated about the centre of gravity the less will be its energy and momentum, and the more widely it is distributed the greater will be its energy and momentum. Now a point can be found at which if the whole mass be hung the energy of the swing will be the same as if the mass were distributed along the rod as in the figure. The distance of this point from the centre of gravity is the swing-radius of the system and is found by multiplying each mass by the square of its distance from the centre of gravity, dividing the sum of all these products by the total mass and extracting the square root. The swing-radius of the system corresponds therefore to the standard deviation of the frequency distribution.

The Standard Deviation gives us a measure of the variability of any particular distribution, and is a concrete number, its magnitude being dependent on the magnitude of the classes. If, however, we wish to compare the variability of two different distributions we must reduce their "standard deviations" to a common basis. This is given by the *Coefficient of Variation*, which is the percentage of the standard deviation on the mean; in other words, 100 times the standard deviation divided by the mean. In Example 2, $\sigma = 1{\cdot}58$, coefficient of variation = 31·6 per cent.; in Example 3, $\sigma = 1{\cdot}37$, coefficient of variation = 41·1 per cent. Thus although the magnitude of the standard deviation of the distribution of Example 2 is greater than that of Example 3, yet when they are put in a comparable form the variation relative to the mean or the coefficient of variation is actually less in 2 than in 3.

It has already been pointed out that there is a difference of symmetry between the polygons 2 and 3. The first is symmetrical and the second asymmetrical or skew. The measure of the *skewness* is the difference between the mean and the mode divided by the standard deviation; for it is clear that the farther the mean and the mode are apart the greater is the skewness, and the more the curve is spread out the less the skewness. The skewness is positive when the mean is greater than the mode. Skewness in Example 2 = (5–5)/1·58 = 0; in Example 3 = (3·334–3)/1·37 = 0·024.

Before turning to the examples of statistical distribution it might be as well to explain that there are two different methods of plotting frequency polygons. In the one which we have hitherto employed ordinates are drawn proportional in height to the frequency of the events at successive points along the axis of x. In the second method rectangular areas are drawn whose bases are equal increments along the axis of x, while their heights, and therefore their areas, are proportional to the frequency of the events occurring within

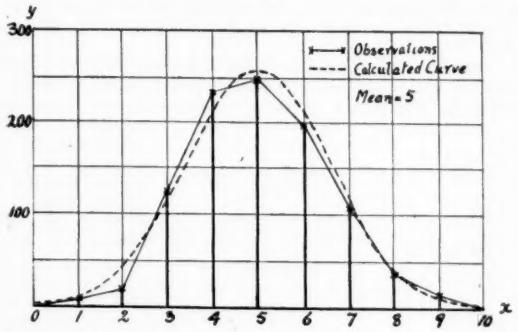
[3] A close approximation to the distribution in the general case $(p+q)^n$ when n is large is given by the curve $y = y_0 e^{-x^2/2\sigma^2}$, where $y_0 = \frac{N}{\sigma\sqrt{2\pi}}$, N being the total frequency and $\sigma = \sqrt{npq}$. This illustrates the change from the discontinuous binomial to the continuous curve.

the limits of the base. Thus in Fig. 7 the number of cases whose age lies between 30 and 35 are represented by the rectangle standing on that base. It follows that the total area of the polygon is proportional to the total number of cases. The first of these methods is more conveniently used for those distributions in which the events occur at fixed intervals, as in the coin-tossing experiments; while the second method is employed for those distributions in which the counts have to be artificially separated into groups, as in the measurements of heights, ages, &c.

It now remains to show that statistical numbers fall into distributions of the same type as these purely chance ones, that they are not chaotic, but follow definite and determinate laws, and that by examining the nature of a particular distribution much more can be learned about it than appears from the ordinary methods of statement.

The simplest form of curve and one into which a considerable number of statistical figures fall is known as the "normal curve of error." If a large number of measurements be taken of any particular quantity, few or none of the measurements will be identical with the true value of the quantity measured—e.g., if a distance of a mile be measured along a straight road the results will differ from the true mile, some by an amount of less than one foot, some by an amount less than two feet and more than one, and so on. If all known sources of error be excluded there will still be a considerable variation from the true value, some of the measurements being less and some greater—i.e., some of the errors in the result being positive and some negative. Mathematicians, on the assumption that there are a large number of sources of error and that these are equally likely to be positive or negative, have shown that the distribution of the final errors gives a particular form of curve. This curve is symmetrical about the mean and extends indefinitely to the right and left, but at a short distance from the mean becomes asymptotic to the axis of x,[4] i.e., practically coincident with it. Although this type of curve was principally studied in connexion with investigations into the statistics of error, it applies to a number of other frequency distributions. As a simple example, let us consider the coin-tossing experiment already referred to. The experimental result of tossing 10 coins 1024 times is given in the annexed table. These numbers have been plotted in Fig. 5, in which

FIG. 5.



the ordinates at 0, 1, 2, &c., are proportional to the number of cases in which 0, 1, 2, &c., heads were turned up. From these numbers has been deduced the equation to a normal curve which has been drawn in the same figure. It will be seen that it gives a close approximation to the polygon, smoothing out the irregularities of the latter. For the sake of comparison the accompanying table contains in column (1) the experimental numbers, in column (2) the numbers given by the curve, and in column (3) the theoretical numbers given by the expansion of the binomial.

No. of heads.	(1)	(2)	(3)
0	0	2	1
1	8	10	10
2	39	43	45
3	122	117	120
4	232	211	210
5	248	258	252
6	196	211	210
7	108	117	120
8	37	43	45
9	14	10	10
10	0	2	1
	1024	1024	1024

[4] Its equation, taking the ordinate through the mean as the axis of y, is $y = y_0 e^{-x^2/2\sigma^2}$, where y_0 is the greatest ordinate and σ the standard deviation.

We proceed now to give an example of a statistical distribution falling under the same law, and for this purpose the heights of 1052 women are classified in the following table. Here Row (1) gives the height in inches, all cases falling between, say 57 inches and 58 inches, being classified as 57·5 inches. Row (2) gives the number of cases of each given height. For example, out of the total of 1052 women, 18 were of height between 57 inches and 58 inches. Row (3) gives the theoretical numbers given by the "normal curve."

Stature in inches	54·5	55·5	56·5	57·5	58·5	59·5	60·5	61·5	62·5
Observed frequency	1	2	7	18	35	80	136	163	183
Normal frequency	1	3	8	21	45	81	124	160	174

Stature in inches	63·5	64·5	65·5	66·5	67·5	68·5	69·5	70·5
Observed frequency	163	115	79	41	16	8	5	2
Normal frequency	159	123	80	43	20	8	3	1

This table has been taken from K. Pearson, "Biometrika," vol. ii., but has been simplified by omitting the decimals as they were unnecessary for the purposes of illustration.

It is easily found that the mean and the mode of the distribution are coincident at 62·5 inches, while the amount of variation from the mean is measured by the standard deviation = 2·4 inches.[5] The whole distribution is graphically shown in Fig. 6, and the normal curve calculated from the numbers is seen to fit very closely to the polygon. It seems clear from these examples that certain distributions can be closely represented by a curve of the type known as the "normal curve of error," and that the statistical distribution given above falls under the same law as that derived from pure chance.

That the normal curve will not fit all distributions is obvious merely from the fact that it is symmetrical, while many statistical series are not so. To Professor K. Pearson is due the credit of having evolved a method of calculating the constants for curves, one form or another of which can be applied to any set of statistical figures which are in any way of the nature of a chance distribution. The mathematical theory of these curves cannot be given here, but the general method of procedure in a given case may be briefly indicated. The system of curves falls into three main types, together with four subsidiary types, which are limiting and therefore simpler forms of the main types. One of the subsidiary types is the "normal curve of error" with which we have already dealt.[6]

From the given set of statistical data a certain constant is calculated whose value shows to which of the seven types the given series most closely approximates. The type being thus discovered, the constants of the curve can then be calculated, and hence the equation to the curve determined. From this a series of ordinates corresponding to the chosen series of abscissæ can be found and the curve plotted in the same units which have already been used for the observations. This having been done, comparison can be instituted between the given statistics and the theoretical distribution which approaches most nearly to the actual numbers. The following table giving the age of spinsters at marriage, taken from the Tasmanian Reports for 1904, may serve as an example of a non-symmetrical distribution. The polygon, which has been plotted in Fig. 7 in the usual manner, will clearly not be

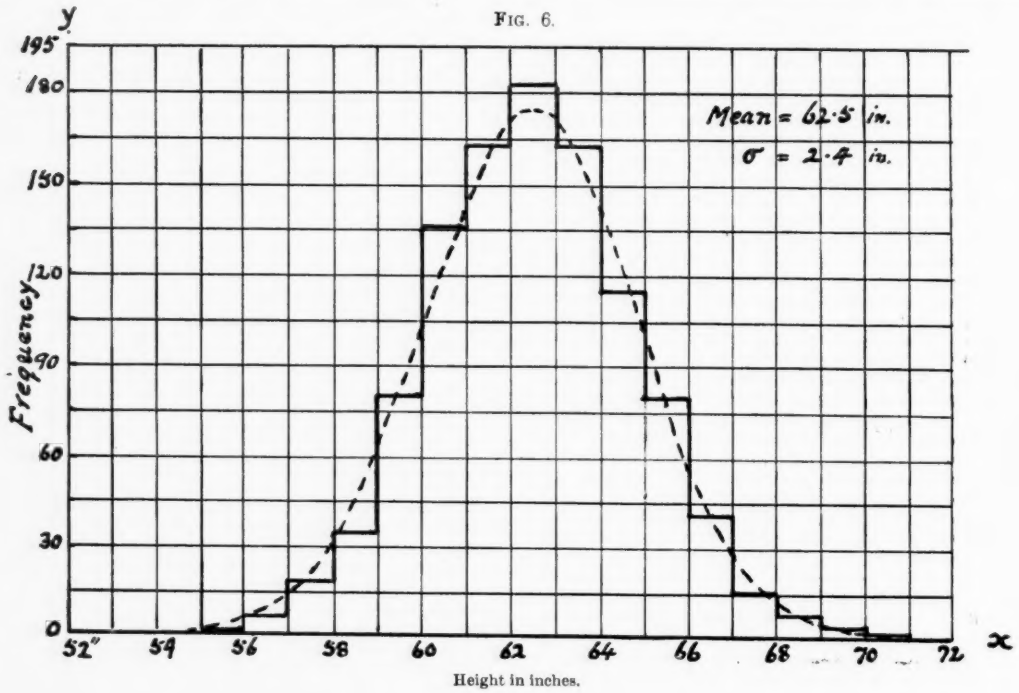
[5] The equation for this curve is $y = 174{\cdot}3\, e^{-x^2/2}$ (5·71), where $y_0 = 174{\cdot}3$ and $\sigma^2 = 5{\cdot}71$.

[6] The division into three primary and four secondary types is for the convenience of calculation. The same fundamental differential equation $\frac{1}{y}\frac{dy}{dx} = \frac{(x+a)}{b_0 + b_1 x + b_2 x^2}$ applies to all, and the equation which results from integrating this depends upon whether the roots of the quadratic $b_0 + b_1 x + b_2 x^2 = 0$ are real and of like sign, real and of different sign, or imaginary.

fitted by a normal curve, but a very close approximation to the statistics is given by the curve drawn in the figure; it belongs to Pearson's Type V.[7] This has been calculated by the method indicated above. The important constants of the distribution are shown in the figure.

It might be well to notice here, although the point has already been referred to, that much more information is gained by this means than is afforded by the mere statement of the mean. This information is, of course, all embedded in the statistics, but it is more or less hidden away until some such method as this presents it in a form in which it can be grasped almost at a glance. Thus we see that while the mean age of spinsters at marriage is 24·8, the age at which the greatest number of marriages takes place is 22·5; that the number of marriages rises very rapidly from the age of 15, and that after passing 22·5 the number decreases rapidly, but less so than it rose, while it tails off to the age of 50 to 55. The standard deviation is 4·7, indicating that about three-fourths of all marriages take place between the ages of about 19 and 28.

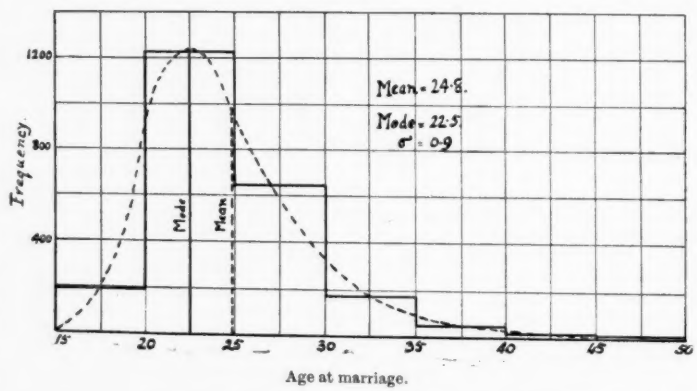
FIG. 6.



An example of a distribution which differs still more from the "normal" is given in Fig. 8. Out of a large number of soldiers who were sent to India 7000 contracted enteric fever after varying periods of residence. The distribution, according to the length of time that elapsed between arrival and development of this disease, is shown in the diagram. Thus, 2561 cases out of the 7000 occurred within one year of their arrival, 1500 cases in the second year of residence, and so on. The curve in this case starts at a great height about the third month and rapidly descends, tailing off till the eighth year. It will be seen here how very little information as to the distribution of the statistics would be given by a simple statementas to the position of the mean, which is at 2·16 years.[8]

In order to show once more the close resemblance between chance and statistical distributions we annex herewith a table in which are given the results of an experiment conducted with 74 white and 26 red counters. These were thoroughly mixed, placed in a circle, and the number of white sequences of all lengths counted, the experiment being repeated until a total of 1000 sequences was reached. From the numbers thus obtained a curve was calculated by Pearson's method which was found to agree very closely with the theoretical numbers deduced from the theory of chance. The following table gives the numbers (1) by actual experiment; (2) those

FIG. 7.



[7] The equation for this curve is $y = y_0 x^{-12·79} e^{-31·147/x}$, where log. $y_0 = 13·5877$.

[8] The equation for his curve is $y = 23·62 \left(\frac{x}{6·479} - 1\right)^{-·4105} \left(1 - \frac{x}{14·54}\right)^{·9211}$

given by the curve; and (3) the theoretical numbers from the theory of probability:—

Observations.	Calculated.	Theoretical.
241	273	252
189	187	191
163	137	143
100	103	108
70	77	81
71	58	60
43	43	45
31	32	33
31	24	24
17	18	18
15	13	13
5	9	9
7	7	7
9	5	5
1	3	3
1	2	2
3	1	2
2	1	1

A glance at the numbers will show that they give a curve of the same nature as the last statistical example given above.

In any series of statistical data information is never given with regard to the whole population, or the total number of existing cases. In measuring the heights of individuals in a particular race or class, in classifying the ages at which a certain disease attacks any population, and so on, we are unable under ordinary circumstances to deal with more than a small proportion of the total number of possible cases. We have therefore to be content with a *sample* of the population which we are studying and to make the most of such data. If these figures are to give us reliable results great care must be taken to see that the sample dealt with is strictly a *random* one—that is to say, that it has not in any way been selected in respect to the quality we are about to deal with, nor in respect to any other quality that is associated in any degree with the one that we are concerned to measure. For example, if we wished to obtain a measure of the mean height of Englishmen it would not be right to take the height of hospital patients, for the mean thus obtained would be vitiated by the fact that these people are mostly drawn from the poorer classes and from the towns, and are therefore probably below the average in physical development.

FIG. 8.

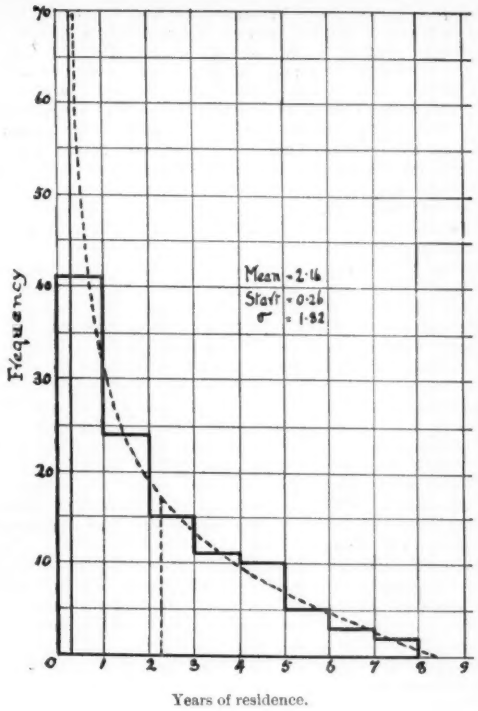
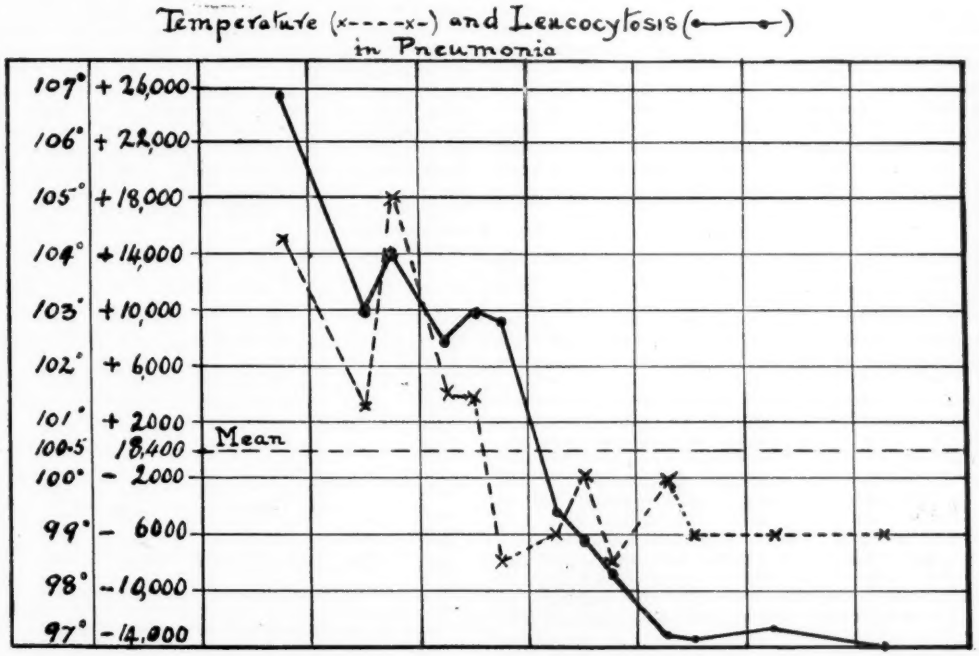


FIG. 9.



Assuming then that we have got a random sample to study, we want now to know how far the results calculated from this group may be taken as fairly representing the general population; in other words, we require a numerical measure of the degree of accuracy with which the constants of the sample would agree with those we should obtain had we been able to deal with the whole population. This measure is given by the *Probable Error* which may be defined as the limit on either side of a given measurement within which

it is an even chance that the true value lies. Take for example, the value of the mean in Fig. 6. Here we are dealing with a random sample of the whole population and the mean height of our sample is not likely to coincide with that which we should obtain were we able to measure the whole. By means of the theory of error, however, we are able to say that it is an even chance that the true value lies within the limits $62{\cdot}5 \pm 1{\cdot}5$ inches—i.e., between 61 and 64 inches. Thus $\pm$ 1·5 inches[9] is the probable error of 62·5 inches, the mean of this particular sample. This gives us the measure therefore of the accuracy of our numerical constants. Without such a measure most statistical results are of little scientific value. The chief factors in determining the size of the probable error are the total number of cases dealt with and the standard deviation of the distribution. The smaller the number of cases the larger will be the probable error, while the smaller the standard deviation the smaller will be the probable error. Again, to get a true idea of this measure it must be looked at, not as an abstract number but in relation to the value of the constant to which it is attached. For instance, if the mean height of women was found from the sample to be $62{\cdot}5 \pm 1{\cdot}5$ inches, the probable error in this case might be regarded as small, but if we were considering the length of human feet whose mean was $9{\cdot}5 \pm 1{\cdot}5$ inches, the probable error would here be very great. Although the actual figure which represents the probable error is numerically the same in the two cases, the comparative values are very different.

It must be clearly understood that the probable error is only a measure of the mathematical want of exactitude of the statistics and in no way a criterion of the correctness of the observations. No mathematical treatment can compensate for incorrect data, although possibly the form of the resulting distribution may lead the expert to suspect that the statistics are not correct records.

It has already been stated that the probable error gives the limits within which it is an even chance that the true value lies. Now it does not mean very much to say that it is an even chance that a certain event will occur, but if we know that the odds in favour of the event are 100 to 1, then we have much sounder justification for anticipating that the event will probably happen. Theory shows us that the odds in favour of the true value lying within the limits of twice the probable error are 4·5 to 1, within three times 21 to 1, four times 142 to 1, while the odds in favour of the true value lying within eight times the probable error are 17,000,000 to 1. When such long odds exist it becomes highly likely that the event will fall within rather than without these limits.

Correlation.

Two series of phenomena are said to be correlated when we find certain values of the one phenomenon occur more commonly with given values of the other. Correlation may be positive or negative. If the increase in the values of one series of phenomena is associated with an increase in the other, the correlation is positive, if the increase in the one series is associated with a decrease in the other the value is negative. If we find the same value of the one occurring indiscriminately with any value of the other there is no correlation. Thus in many diseases the pulse-rate rises and falls with rise and fall of temperature—i.e., body temperature and pulse-rate are correlated phenomena. If 100 men be measured as to height and weight it will be found that on the average taller men weigh more—i.e., weight and height in men are correlated characters. The one-foot earth temperature varies with the amount of sunshine and with the amount of rainfall, increasing with the former, decreasing with the latter, but dependent on both. There is positive correlation between one-foot earth temperature and amount of sunshine, negative correlation between one-foot earth temperature and amount of rainfall.

The study of correlation has for its object the determination of a quantitative measure of the degree of association in such phenomena as these. The method of arriving at this measure will be best illustrated by an example. In Osler's "Principles and Practice of Medicine," p. 178 (sixth edition), a chart is given which is designed to show that the leucocytosis which exists in most cases of acute pneumonia disappears coincidently with the decline in temperature. This chart is reproduced in Fig. 9 modified so as to illustrate our present subject—i.e., the curves have been superimposed one on another and the mean temperature made to coincide in position with the mean of the number of leucocytes. Inspection of this figure is sufficient to show that on the whole there is a distinct resemblance between the two curves. We will now proceed to indicate the method by which a quantitative measure of this resemblance is obtained.

If we examine the two curves in detail we notice that their resemblance to one another depends on the circumstance that a deviation above the mean in the one is generally accompanied by a deviation above the mean of about the same amount in the other, and a deviation below the mean in the one by a deviation below the mean of about the same amount in the other. On the other hand, they are dissimilar in so far as a deviation above the mean in the one may be accompanied by a deviation below the mean in the other, or a large deviation in the one by a small deviation in the other. Now the product of two positive quantities, or of two negative quantities, is positive, while the product of a positive quantity by a negative quantity is negative. If, therefore, every deviation from the mean—i.e., every ordinate of the curve (1) be multiplied by the corresponding ordinate of curve (2), each being given its appropriate sign, the result would be a series containing a large number of positive terms and a small number of negative terms. If, on the other hand, the curves were very dissimilar the reverse would be the case—i.e., there would be many negative and few positive terms. The quantity thus obtained gives therefore a foundation for the measure which we require, being large and positive if the curves are similar, large and negative if they are complementary (as though the first curve were reflected in a mirror), and small or zero if there is no resemblance between them.

In order to get a satisfactory measure for the comparison of different cases this quantity is divided by its maximum value, which is the product of the standard deviations of the two distributions, multiplied by the number of observations. The ratio thus obtained is called the *Coefficient of Correlation* and is denoted by r. If the two curves are the same $r = +1$. If the one is the reflection of the other $r = -1$. Between these two limits r may take any value. This will be made clearer if we work out the temperature-leucocytosis example we have been considering. For this purpose the observations are tabulated in columns (1) and (4) of the annexed table. The deviations from the means are given in columns (2) and (5), the squares of these deviations in columns (3) and (6), while their product is given in column (7).

(1)	(2)	(3)	(4)	(5)	(6)	(7)
104·2	+3·7	13·96	44·0	+25·6	655·4	+94·71
101·3	+0·8	·64	28·0	+ 9·6	92·2	+ 7·68
104·8	+4·3	18·49	32·0	+ 13·6	185·0	+58·48
101·6	+1·1	1·12	26·0	+ 7·6	57·8	+ 8·36
101·4	+0·9	·81	27·6	+ 9·2	84·6	+ 8·28
98·6	−1·9	3·61	27·4	+ 9·0	81·0	−17·10
99·0	−1·5	2·25	13·8	− 4·6	21·2	+ 6·90
100·0	−0·5	·25	11·4	− 7·0	49·0	+ 3·50
98·6	−1·9	3·61	9·2	− 9·2	84·6	+17·48
100·0	−0·5	·25	5·2	−13·2	174·2	+ 6·60
99·0	−1·5	3·25	4·8	−13·6	185·0	+20·40
99·0	−1·5	3·25	5·8	−12·6	158·8	+18·90
99·0	−1·5	3·25	4·0	−14·4	207·4	+21·60
	0	54·74		0	2036·2	255·79

Those who have grasped the definitions of mean and standard deviation given in the first part of this paper will have no difficulty in following the arithmetical work involved in making the necessary calculations. The sum of column (3) divided by 13—the number of the observations—gives the square of the standard deviation of the first distribution, and similarly for column (6). These standard deviations are therefore respectively 2·05 and 12·87, and the value of r is 255·79 divided by $13 \times 2{\cdot}05 \times 12{\cdot}87 = {\cdot}76$. This shows

[9] The probable error of the mean is equal to $0{\cdot}67449\sigma/N$. This shows the direct relation of the size of the probable error to the standard deviation.

that there is a very considerable correlation between the temperature and leucocytosis in this case of pneumonia.

It is clear that if a system of 100 or more observations had to be tabulated the above method of procedure would be a very lengthy and cumbrous one. It has been very much simplified by adopting another way of arranging the data, which we will illustrate by means of the same example. Through a point near the centre of a piece of squared paper draw two axes at right angles to one another (Fig. 10). Along the horizontal axis mark off

FIG. 10.

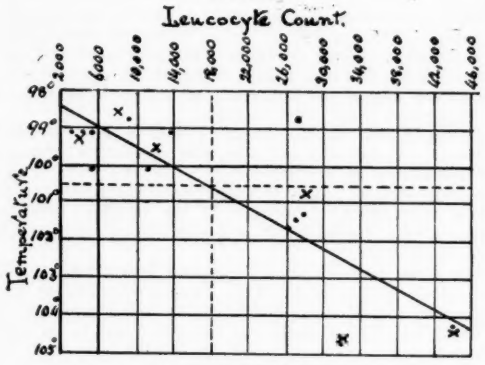
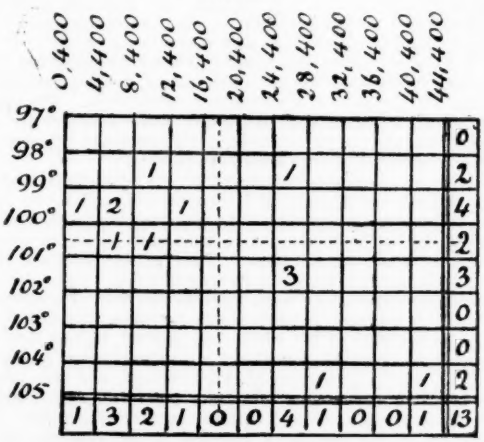


Diagram of regression line

deviations from the mean of the temperature, and along the vertical axis deviations from the mean of the leucocyte count. By this means each observation can be represented on the diagram by a single point whose abscissa is its deviation from the mean temperature and whose ordinate is its deviation from the mean leucocyte count. The observations are then represented by a system of dots most of which lie in the upper left hand and lower right hand quadrants. They occupy a belt running from corner to corner of the paper. If the curves were quite similar to one another, so that the abscissæ and ordinates of the points were in a constant ratio, these dots would actually lie on a straight line. If one curve were the complement of the other the line would run from the lower left hand to the upper right hand quadrant. If there were no association the points would be scattered indiscriminately about the paper. This is

FIG. 11.



a point to which we shall return later. Meantime, we proceed to show how the arithmetical work of finding the coefficient of correlation is now to be carried out. A "correlation table" is constructed on the same principle as the figure, the dots being replaced by numbers, each of which is equal to the number of observations lying within its own compartment. (Fig. 11.) By adding these numbers in rows and columns we get the two distributions of the observations, one according to temperature, the other according to leucocytosis. The denominator of the fraction which has been defined as the coefficient of correlation is 13 times the product of the standard deviations of these two distributions. The numerator of the fraction is found by adding together all the products obtained by multiplying the numbers in the table by their respective ordinates and abscissæ giving them their appropriate sign (ordinates positive above the axis of x, negative below; abscissæ positive to the left of the axis of y, negative to the right). We thus obtain as the result $r = (57-4)/13 \times 1{\cdot}89 \times 2{\cdot}95 = {\cdot}73$. The difference between this result and the previous one is due to the slight inaccuracy introduced by the second method caused by grouping any temperature lying between, say, 100·5° and 101·5° as being at 101°, and by similar slight modifications of the leucocyte counts. The advantage of this method is better seen when large correlation tables are being calculated as the saving in labour by grouping is very great. The number of observations being large the loss in accuracy is negligible.

Returning now to Fig. 10; here the crosses represent the mean points of the different columns—e.g., the mean temperature for all cases in which the number of leucocytes was between 2000 and 6000 is 99·25° In this case the observations are so few that the observations and mean points in several cases coincide. These mean points have a general tendency to be lower in the figure as we pass from left to right. If a straight line be drawn through the mean point of the whole distribution approximating as nearly as possible to the mean points of the columns, the slope of this line will give a general measure of the rate at which leucocytosis increases with increase in temperature. This line is known as the regression line. It can be directly calculated from "r," the coefficient of correlation, and has, as we have seen, a physical meaning.

So far we have only dealt with data which are quantitatively measureable, but it is possible also to construct a correlation table from which "r" can be calculated when the material dealt with is not quantitively measureable. The mathematics of this subject are somewhat advanced, and we shall therefore content ourselves with showing how such a table is constructed, so that references to the method in medical literature may be followed, even though the method itself is beyond the non-mathematical reader. As examples of medical problems which can be solved by this method, we may mention the correlation between vaccination and the power to resist small-pox when contracted and the protective value of antityphoid inoculation. The following example is taken from a paper by one of us on "The Statistical Study of Antityphoid Inoculation" ("Biometrika," Vol. VI.). The statistics are divided into four groups—viz., (1) inoculated and not attacked; (2) inoculated and attacked; (3) uninoculated and unattacked; (4) uninoculated and attacked. These returns were obtained from seven large Indian stations, and are as follows:—

—	Inoculated.	Uninoculated.	Totals.
Not attacked	2192	7940	10,132
Attacked	15	173	188
Totals	2207	8113	10,320

The value of "r" calculated from this by what is known as the "four-fold table" method is $r = 0{\cdot}2395 \pm 0{\cdot}0188$, showing that in this case there is a small positive correlation between inoculation and freedom from attack.

We have perhaps said enough to show that this method gives us a very valuable means of expressing the degree of association between two distributions which cannot be expressed in a graduated scale. This is clearly a great advance in statistical analysis.

CITY OF LONDON ASYLUM.—The new nurses' home of the City of London Asylum, Dartford, Kent, will be opened by the Lord Mayor of London and the Lady Mayoress on Saturday, May 28th.

MODERN METHODS OF DELIVERY IN CONTRACTED PELVES.[1]

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THE changes recently introduced into operative obstetrics have become sufficiently well established to enable us now to lay down definite rules for precise treatment in any given case of contracted pelvis. In order to do this an accurate knowledge of the pelvic measurements is necessary. Such knowledge can be obtained by the use of Skutsch's pelvimeter, and in no other way so far as I know. It is certain that a knowledge of the length of the diagonal conjugate by no means gives us an accurate indication of the length of the true conjugate. From a theoretical standpoint there is nothing that can be said in favour of such a method, and to those who have made themselves practically efficient in the use of Skutsch's pelvimeter the hopelessness of trying to deduce any accurate data from an estimation of the diagonal conjugate is only too well known. Like all other arts, pelvimetry has to be learned. The proper use of Skutsch's pelvimeter necessitates considerable practice. In the hands of an expert its records are accurate to within one-sixth of an inch. Practically this is sufficient for the adoption of a correct line of treatment.

Theoretically the finding of the pelvic measurements will furnish us with only half the required data, for the size of the fœtal head will still be unknown, but practically this unknown quantity may be disregarded. It is found that the children born at full term of mothers with contracted pelves are up to or even beyond the average weight. In my last 61 cases of contracted pelvis with a true conjugate of 3⅛ inches or under the children averaged 7½ pounds in weight. The size of the children may be accounted for by the fact that the presenting part is unable to sink into the pelvis. Therefore the cervical ganglia are not pressed on and escape the stimulation capable of starting the processes of labour at term; consequently these women do not fall into labour until after full term. Whether this be the true explanation or not, the fact remains that it is unsafe to assume that a full-sized fœtus is not carried by the deformed woman.

There is a generally accepted belief that the relative proportion of head and pelvis can be ascertained by Müller's manœuvre—i.e., pressing the head into the pelvis under deep anæsthesia. As a matter of fact this plan often ends in disappointment, for unless the head lies in flexion the method fails in its purpose. It will also fail if the fœtus lies in the third or fourth positions, and in obese women it becomes a matter of considerable difficulty to carry out the manœuvre. At best it is but an adjunct to treatment based on pelvic measurements. By itself it is far inferior to the latter.

It is convenient to classify pelvic contractions into five degrees, the first four of which are separated from each other by ½ inch measurements in the conjugate diameter, whilst the fifth comprises all pelves with a true conjugate measuring less than 2¼ inches. This classification is based on the assumption that a simple flattened pelvis has been measured. The treatment for generally contracted pelvis of a certain degree is that of a simple flattened pelvis with a true conjugate ½ inch shorter. When the degree of deformity is known treatment becomes simple and certain.

Contractions of the first and even of the second degree are seldom diagnosed with certainty unless complications arise suggesting the advisability of taking the measurements. They may lead to abnormalities of presentation, prolapse of the cord, premature rupture of the membranes, and prolonged first and second stages. In the absence of such complications, and even in spite of some of them, a woman may be expected to deliver herself safely if given ample time for the several processes and provided the child is not abnormally large. In such cases trouble usually arises from meddlesome interference, attempts to deliver when the rim of the os is still felt, or the head not fixed in the brim by its largest diameter. The employment of Walcher's position to assist fixation of the head in the brim, and the application of forceps when the head has properly fixed, are both aids that may hasten successful delivery. It is only in the event of danger to mother or child arising that operations for enlarging the pelvic brim need be considered. Induction of premature labour is never required, nor is prophylactic turning justifiable when employed as a measure to aid delivery.

The question of treatment becomes much more difficult in the third degree of contraction, with a conjugate measuring between 3¼ inches and 2¾ inches. With such measurements normal delivery is neither to be looked for nor expected. If the patient is healthy and in suitable surroundings and is seen just before labour starts or early in the first stage, the classical Cæsarean section offers a satisfactory means of delivery. When performed under favourable circumstances it is almost a perfect operation. If the woman is long in labour, with the membranes ruptured, symphysiotomy or pubiotomy should be preferred, whilst perforation is the obvious resort if the child is dead.

In the fourth degree, a pelvis with a true conjugate between 2¾ inches and 2¼ inches, the contraction is too great for pubiotomy or symphysiotomy. If the child is alive Cæsarean section, intra- or extra-peritoneal, offers the only means for rational delivery. If the child is dead perforation with cephalotripsy and cleidotomy can be relied upon for delivery.

When the true conjugate measures less than 2¼ inches abdominal section is the only method of delivery to be considered. Mutilating operations in these cases are very difficult and highly dangerous, therefore not to be recommended.

I have had an opportunity of repeating Cæsarean section on three of our patients. In all these there was no visible stretching of the abdominal scar; there were no adhesions between the intestines and uterus or between the uterus and abdominal wall. The fine silk (No. 3) which was used exclusively to close both the uterus and abdominal fascia had been completely absorbed, although in one case only 11 months had elapsed since the previous operation. Still more satisfactory is the fact that the uterine scars could not be seen and were felt with difficulty.

In spite of these successes I have only felt justified in performing classical Cæsarean section 13 times during the last six years. Many of my cases were not seen sufficiently early, or else had conditions present which contra-indicated the operation. That this is the experience of others whose skill in the performance of the operation places them beyond criticism is evidenced by the opinions expressed at the recent meeting of the British Medical Association. It was there declared that craniotomy on the living child was justifiable and to be recommended if conditions did not seem favourable to the success of Cæsarean section. Personally I do not subscribe to such an opinion and have never found it necessary to perforate a living child.

I have to record one fatality in these 13 operations; the woman collapsed whilst under anæsthesia, immediately after the removal of a very adherent placenta. The operation was attended with singularly little hæmorrhage and death was attributed to shock, a condition not uncommonly seen in association with adherent placenta.

Much has recently been heard of the operations of symphysiotomy, pubiotomy, and hysterotomy, and many think that these are simply rivals to classical Cæsarean section. Were this so, I should not be concerned in recommending them to your consideration. They neither compete with Cæsarean section, nor even with each other. They are complementary operations, each with its own field of usefulness. Until this is clearly realised it will be impossible to stay the present sacrifice of life which has resulted, and must result, from such obsolete procedures as induction of premature labour, prophylactic turning, high forceps, and perforation. It is only a matter of a few years before all these methods of delivery will be viewed with the utmost abhorrence. Not only will it be considered criminal to perforate the head of a living child, but to permit one to die because of delay in delivery, or from obsolete methods, will rightly be condemned.

Symphysiotomy or pubiotomy is to be highly recommended when danger symptoms to mother or child arise during labour with a pelvis not smaller than 2¾ inches in the true conjugate. With both delivery can be easily accomplished, with both convalescence should be uneventful, simple, and painless, and with both the patient may be expected to sit

[1] A paper read before the Obstetrical and Gynæcological Section of the Royal Society of Medicine, Feb. 14th, 1910.

up in bed on the fourteenth day, in a chair on the fifteenth day, stand and take a few steps on the sixteenth day, and walk freely from the seventeenth day. Union in both should be complete, and subsequent pregnancy, if not made easier, should be certainly not more difficult. In favour of symphysiotomy is the fact that no special instruments are required and hæmorrhage is not severe, whilst pubiotomy gains by reason of its greater simplicity and diminished liability to injury of the bladder. Particularly is this so when the subcutaneous method of Professor Bumm is employed.

My personal experience of these operations is covered by 8 cases—2 symphysiotomies, 5 pubiotomies after the manner described by Professor Döderlein, and 1 subcutaneous pubiotomy. It is of this latter that I particularly want to speak, for in it I feel that we at last possess a plan so simple and so safe in technique that we are justified in recommending it for adoption by the general practitioner as a means of successful delivery in obstructed labour.

The operation.—The patient is placed in the cross-bed position, shaved, and disinfected. The vagina is tightly plugged with pledgets of sterile cotton-wool wrung out in weak lysol solution. This is an important step in the operation. The rugæ of the vaginal wall are smoothed out, making the action of the antiseptic more efficient. But its most useful action is dilatation of the vagina, which permits ready and rapid delivery without fear of extensive tears of the soft parts. This plug remains in place about half an hour, whilst the preparations for the operation are finished and the anæsthetic is given.

The operator, seated between the patient's legs, which are allowed to hang down, removes the plug, douches the vagina, and empties the bladder. The site of puncture should be on the skin outside the labium majus. Without any preliminary incision the needle is plunged down to the under surface of the pubes. A finger in the vagina guides its further progress. The needle is made to hug the back of the pubes until it emerges on the abdomen just above the pubes and ½ inch to ¾ inch to the side of the symphysis. A Gigli saw is hooked on to the needle and pulled through the wound when the needle is withdrawn. The bone is now divided in the usual manner without any laceration of the soft parts. This is surprising, for without experience of the operation one would be inclined to believe that laceration would be severe. The fact is that the soft tissues cling so tightly to the saw that they move with it as the bone is being severed. A finger placed on the front of the pubes gives immediate warning of the severance of the bone. An assistant at either side of the patient prevents the pelvis springing apart too suddenly. Labour may be terminated immediately by forceps or version, or the patient may be allowed to deliver herself naturally, provided the child's life is not in danger.

The hæmorrhage which spouts from the punctures when the saw is removed is easily controlled by digital pressure. After the third stage is completed a compress of gauze is the only dressing required. The binder is applied as usual, and to give greater support a broad canvas belt is placed on the outside of the binder around the trochanters. A navvy's belt answers the purpose admirably.

The patient is turned from side to side in 12 hours and can turn herself on the third day. On this day the bowels should be moved; for this the patient is elevated on to the bed-pan by the binder. This raising causes no pain and the patient is always lifted in this manner when the draw sheet is renewed. When the binder is to be changed it is slipped into the hollow of the back, the patient is raised by the belt, and a new binder laid under her. The belt is then slipped up and taken out, the patient raised by the binder, and the belt replaced outside the binder as before. The wound is completely healed within two or three days, and it is impossible to find the puncture marks after a short time.

In performing Döderlein's pubiotomy there is greater fear of infection as a compound fracture is produced; therefore asepsis should be thorough and complete here, as in all obstetrical operations. The incision over the pubes should be vertical, not horizontal. In this way the ligaments are severed and free access to the bone obtained. The bladder should be separated by pressing a gloved finger through this wound. The needle should be made to hug the bone as closely as possible and to emerge outside the labium majus. In both these operations more than one saw should be provided, as they are liable to break.

The technique of symphysiotomy is too well known to need description. There are only a few points to which I desire to call attention. The incision, not longer than 1 inch, should be made on the abdomen above the pubes down to the symphysis. This incision completely obviates the danger of hæmorrhage or injury to the urethra. The gloved finger is pushed into this wound and behind the pubes, separating the bladder. With the finger in the wound the cartilage is cut from above downwards and within outwards. The finger thus protects the bladder from injury. The sub-pubic ligament is not severed if delivery can be accomplished without it. No drainage is necessary. Subsequent treatment and convalescence are exactly the same as in Döderlein's pubiotomy, and the results are equally good.

Were these the only operations at our disposal the treatment of contracted pelvis would still be imperfect and unsatisfactory. There would be no provision for the treatment of the higher degrees of contraction when the patient is far advanced in labour. For such cases forceps and turning are quite impracticable. Perforation is not permissible if the child is alive. Symphysiotomy and pubiotomy should not be performed if the true conjugate is less than 2¾ inches. When these cases are advanced in labour, with ruptured membranes, with the uterus retracted on the fœtus, with Bandl's ring well up towards the umbilicus, indicating a marked expansion of the lower uterine segment, they are notoriously unsuitable for classical Cæsarean section. It is precisely for these conditions that extra-peritoneal Cæsarean section or hysterotomy is indicated.

At present there is an erroneous view that this operation should not be performed if there is a suspicion of the presence of sepsis. Provided the child is alive, the possibility of sepsis should not prevent the operation, for neither the general peritoneal cavity nor the cellular tissue is exposed to any extent, and no unclosed spaces are left when the operation is finished. The risk of sepsis is not increased. To my mind, the non-exposure of the peritoneal cavity and cellular tissue is the greatest advantage it possesses. Therefore I believe that the true extra-peritoneal operation developed by Sellheim is based on wrong principles, for in it the cellular tissue is extensively exposed.

In the operation I am about to describe the intestines need never be seen. Escaping liquor amnii or blood cannot gain access to the general peritoneal cavity. There is no scar to which intestines might adhere. There is no danger of rupture of the uterus in a subsequent pregnancy. Ample room is provided for easy and rapid delivery, whilst the incision passes through a thin wall of relatively non-vascular tissue. Finally, the more advanced the labour and the more marked the lower uterine segment, the simpler becomes the operation.

The operation.—With the usual aseptic precautions a transverse incision is made from one anterior superior spine to the other, passing about one inch above the pubes. This incision is carried down to, and then through, the sheath of the rectus. The upper edge of the wound in the rectal sheath is separated upwards from the muscles, and the latter are divided with the handle of the knife. The transversalis fascia is then broken through and the peritoneum incised transversely. The bladder is raised, putting the vesico-uterine fold of peritoneum on the stretch. A small opening into this fold permits the passage of a finger between the uterus and bladder. On this finger the peritoneum is divided across the whole width of the vesico-uterine fold. The upper edge of the incised peritoneum is seized and separated upwards from the uterus. Its edge is then stitched to the upper edge of the transverse incision in the parietal peritoneum, to shut off the general peritoneal cavity from the field of operation, and to enclose the intestines in a bag of peritoneum. Interrupted sutures should be used, as a continuous suture causes puckering and contraction of the opening. The sutures should be placed well out to the lateral aspect of the opening, closing the angles. If this is not done communication is not shut off, and fluids may enter the abdominal cavity or the intestines may appear at the angle of the wound. It is not necessary to stitch together the two layers of peritoneum above the bladder.

The exposure of the lower uterine segment thus obtained

permits easy delivery. The lower uterine segment and cervix are opened longitudinally. If the head presents it is extracted with the left blade of the forceps and one hand. If any other portion of the child presents it is extracted manually. The cord is clamped and cut. Time is given to allow partial separation of the placenta. During this pause a hypodermic injection of 1-50th of a grain of ergotinin may be administered. Post-partum hæmorrhage was a complication in my three cases. The placenta and membranes are removed, the uterus douched and then plugged with iodoform gauze, the end of which is pushed through the cervix into the vagina. The uterine incision is closed by interrupted catgut sutures; the free edge of the peritoneum immediately above the bladder is united by interrupted catgut sutures to the upper portion of the peritoneum from which it was originally severed. The sheath of the rectus is closed with continuous No. 3 silk sutures, and the edges of the skin wound are brought together by Michel's clamps or in any manner convenient to the operator.

To sum up, my views on the treatment of contracted pelvis are:—

1. Induction of premature labour is never advisable.
2. Perforation is not permissible unless the child is dead.
3. Turning should never be employed as a treatment for contracted pelvis, but may still be performed for complications of labour, such as prolapse of the cord when associated with contractions of the first and second degree.
4. In the greater degrees of contraction time should not be wasted in an endeavour to obtain natural delivery.
5. On the other hand, in the lesser degrees ample time should be given the woman to enable her to deliver herself if possible. Eight or ten hours may be necessary for the moulding of the head, and interference should not be considered until there are evidences of fœtal or maternal distress. Once fœtal symptoms of distress are manifested there should be no delay in delivery. Walcher's position should not be forgotten as an aid to fixation of the head.
6. High forceps should never be applied until all arrangements are perfected for an operation to enlarge the pelvis. It is, in my opinion, a pity to proceed to the latter expedient until forceps have been tried tentatively. It must be confessed they occasionally accomplish their purpose under the most unexpected circumstances.

Finally, in these, as in all other obstetrical operations, the best results cannot possibly be obtained if rubber gloves are not worn.

Dublin.

THE OCCURRENCE OF ACETONURIA IN CASES OF INFECTIOUS DISEASES.

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THE acetone bodies are present in the urine in a number of diseases, of which the following are the principal: (1) Fevers; (2) gastro-intestinal diseases; (3) diabetes mellitus; (4) post-anæsthetic poisoning first described by Guthrie under the name of delayed chloroform poisoning; (5) recurrent vomiting of children; (6) toxæmic vomiting of pregnancy; (7) acute yellow atrophy of liver; (8) phosphorus poisoning; and (9) starvation.

The acetone bodies which may be found in the urine are: (1) β-oxybutyric acid, $CH_3—CHOH—CH_2—COOH$; (2) diacetic acid, $CH_3—CO—CH_2—COOH$; and (3) acetone, $CH_3—CO—CH_3$. The first is the primary substance which gives rise to the other two bodies. Butyric acid is one of the lower fatty acids, which, it is supposed, can be formed in the body by the breaking down of the higher fatty acids. The oxybutric acid is formed by the oxidation of the butyric acid.

There is no satisfactory explanation to account for the formation of acetone in the body. It is certainly curious to find, as will be shown in the concluding part of this note, that it occurs much more constantly in diphtheria and scarlet fever than in enteric fever. The usual theory propounded to explain the occurrence of acetonuria in disease is the inability of the body to absorb and make use of carbohydrate food, so that the protein and fats have to be decomposed in order to supply the energy of the body.

There are several tests for acetone, of which the following are the most reliable:—

1. Lieben's test. This depends on the formation of iodoform from acetone in the presence of iodine and caustic potash. The urine is distilled and to the first few cubic centimetres of the distillate are added a solution of iodine and caustic potash. It is important to use an aqueous solution of iodine as an alcoholic one will form iodoform without the presence of acetone. A solution of iodine in potassium iodide is usually employed.
2. A freshly prepared solution of nitro-prusside of sodium is added to a mixture of the urine and caustic potash. In the presence of acetone a reddish-brown colour is produced which turns deep red on adding dilute acetic acid.
3. One gramme of solid caustic potash is added to about 10 cubic centimetres of urine. Before it has all dissolved 10 drops of salicylic aldehyde are added. The mixture is then heated to 70° C. In the presence of acetone a scarlet ring is formed.
4. A few drops of a freshly prepared solution of nitroprusside of sodium are added to 3 cubic centimetres of the urine. On the surface of this is run a strong solution of ammonia, which, being lighter, floats on the surface. If acetone is present a well-marked magenta colour appears at the junction of the liquids and spreads upwards. If the time is taken from the addition of the ammonia until the appearance of the colour, a rough indication of the amount of acetone in the urine can be formed. If the urine of a case of scarlet fever or diphtheria is examined daily this time will be found to increase gradually until the reaction no longer is produced.

From an examination of the urines of cases in the Isolation Hospital, Southampton, acetone was found to be present in most of the cases of scarlet fever and diphtheria admitted; as regards enteric fever it was found only in about a third of the cases. According to recent authorities the acetonuria of fevers is to be attributed to the acidosis accompanying partial or complete deprivation of food. If this explanation is correct it seems strange that in a disease like enteric fever where there is diminished absorption of food (as shown by the condition of the tongue, diarrhœa, and pyrexia) acetonuria should only occasionally be met with, and then only at the beginning of the disease. On the other hand, in diphtheria and scarlet fever acetone is almost invariably present even in mild cases where, as there is little disturbance of digestive functions, a fair amount of carbohydrate food can be given. That pyrexia has little to do with acetonuria is shown by the fact of its occurrence in many cases of diphtheria in which no rise of temperature has been noted.

As a general rule it has been found in the cases of scarlet fever and diphtheria treated at this hospital that the more severe the disease the larger is the amount of acetone in the urine, and the longer is the period during which it remains in the urine. In a mild case of diphtheria the acetone disappears from the urine on about the seventh day of disease; in a severe case it may be present up to the thirteenth day. In the so-called "vomiting" diphtheria cases, which are always fatal, the acetone reaction is not more marked than is usually the case with a severe type of the disease. There is no increase in the amount of acetonuria at the onset of vomiting.

The presence of acetonuria seems to possess some diagnostic value in differentiating between diphtheria and scarlet fever on the one hand and an ordinary sore-throat on the other. It is much more constantly present in the former cases. In adults, even in diphtheria and scarlet fever, it is not present so constantly as in children.

Of 197 consecutive cases of scarlet fever admitted into this hospital 167 were found to have acetonuria, which is equal to a percentage of 84·8. Of 96 cases of diphtheria 87 were found to have acetonuria, which is equal to a percentage of 90·6. Of the adults admitted 8 had acetonuria and 7 had none. There were only two cases of diphtheria in children in which no acetone was found; one of these cases was one of laryngeal diphtheria in which the toxic symptoms of diphtheria are generally absent. Of 21 cases of enteric fever only 7 showed some evidence of acetonuria, which is equal to a percentage of 33·3. In six of these 7 cases the acetonuria was so slight as to be only with difficulty demonstrated. Of the 14 cases that had no acetone in the urine 8 were severe cases

A CASE OF LYMPHATISM.

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CLINICAL PATHOLOGIST TO CHELTENHAM GENERAL HOSPITAL; TO THE EYE, EAR, AND THROAT FREE HOSPITAL, CHELTENHAM; AND TO WINCHCOMBE COTTAGE HOSPITAL.

THE patient was a well-nourished boy, aged 15½ years, but he looked younger. His parents were both dead, and no history could be obtained about them. He had two brothers and three sisters all alive and well. The boy here referred to was the third in the family; his previous health had been good, and he was employed as a boy-labourer in a stone quarry. During the 12 months before admission a lump in his neck had been growing larger, and in January the workmen in the quarry complained of his laboured breathing when he exerted himself, on account of which he was sent to the hospital. On Jan. 29th he was admitted to the Cheltenham General Hospital under the care of Mr. J. Howell.

On admission there was great dyspnœa; inspiration was more stridulous than expiration. His breathing was unaffected by his position, but was increased by any exertion. Mr. Norman Pike examined the larynx and found both cords in a condition of abductor paralysis. Both pupils were dilated; the right pupil reacted to light more slowly than the left. No nystagmus was present; the ocular convergence was normal. The patient had no headache or vertigo. The superficial veins of the neck and thorax were distended. The note of the house surgeon, Dr. Rae, records that the percussion note over the thorax was normal, and no adventitious respiratory sounds were heard. The thyroid gland formed a large rounded tumour in the neck, larger on the right side than the left. The pulse varied from 100 to 150 per minute; the first sound of the heart was impure; the second sound was forcible and clear. A faint systolic bruit was heard over the pulmonary area. There was no exophthalmos.

As the dyspnœa was becoming steadily worse, Mr. Howell considered it necessary to remove one of the thyroid lobes on Feb. 1st. The boy was very nervous and apprehensive in regard to the anæsthetic and the operation. Three-quarters of an hour before the operation a local anæsthetic was injected. The solution was made according to the formula: ℞ eucaine, gr. iii.; sodii chloridi, gr. xii.; aq. destill., ℥iii.ss.; sol. adrenalin chlor. ♏. x. (1 in 1000, Parke, Davis, and Co.). Of this solution 8 cubic centimetres were injected into the skin round the right lobe of the thyroid. At the same time morphia (⅛th grain) was administered subcutaneously. As the boy was frightened and crying before the operation commenced, the operator asked for a general anæsthetic to be given. Chloroform was chosen by Dr. Burt as having proved the best general anæsthetic for thyroidectomy. The boy was weeping and crying out with fear at the induction of anæsthesia and there was considerable laryngeal stridor, but as anæsthesia was established it lessened and ceased when the capsule of the gland was incised. The breathing was now quite easy and regular. The conjunctival reflex was never lost. The pupils were moderately contracted. The colour of the face was good and the pulse was 100 beats to the minute.

After the right lobe of the thyroid had been removed and the operation was nearly completed, the patient partly came to from the anæsthetic. More chloroform was given. Almost immediately the boy became pale, and the pallor was rapidly succeeded by cyanosis. No mucus was present in the throat, nor any other obstruction to respiration. The patient ceased to breathe. Silvester's method of artificial respiration was at once begun, and traction was made on the tongue. The head was lowered, a hot fomentation was applied to the heart, and hypodermic injections of ether and strychnine were given. About five minutes later the cyanosis was replaced by a fresh red colour for a few seconds which again gave place to cyanosis. The heart apparently ceased to beat five to seven minutes after the cessation of respiration.

Some remarks made by Dr. A. S. Currie in the recent discussion on Lymphatism, at the Royal Society of Medicine,[1] seem to us very pertinent to this case. They are as follows:—

> The question of inhibition of respiration arose, as anæsthetists well know, at certain periods during the administration.
> When he was conducting his experiments single-handed, if the animal was partially roused from the anæsthetic and he stopped and rapidly anæsthetised the animal, he almost invariably found that the animal died almost as if it had been shot. He was much puzzled by that until he found a paper in the *Anatomical and Physiological Journal* by Professor Rutherford, in which he said he had noticed a similar inhibition of respiration and that it was entirely due to an irritant effect on the nasal branches of the fifth nerve, for he found that if he destroyed those nasal branches by the cautery, and chloroformed the animal, that inhibition did not take place, and if he tracheotomised the animal there was no inhibition.

It was recognised beforehand that this boy was a bad subject for a respiratory anæsthetic, and for that reason local anæsthesia was used. Whether the injection of morphia and eucaine increased or lessened the danger from the general anæsthetic we do not know. It was hoped that it would have had the latter effect. It seems certain that there is present in these cases of lymphatism a morbid susceptibility to shock, and that a stimulus which in a normal subject would be quite harmless may give rise to a fatal reflex inhibition of the heart.

Necropsy.—A post-mortem examination was made on Feb. 3rd. The body was that of a well-nourished boy. There was no hair on the pubes or upper lip, and the body had the appearance of a boy of 13 years rather than of 15½, which was his actual age. There was a wound in the neck and the right lobe of the thyroid gland had been removed. The thymus gland lying behind the manubrium was much enlarged and weighed 37·44 grammes, or a little over 1½ of an ounce. Microscopical examination of sections of the gland showed no degenerative changes. The gland presented the usual division into lobules, with a differentiation into a cortical and a medullary portion. The corpuscles of Hassall were present in about the usual number and did not exhibit any degenerative change, the condition being a pure hypertrophy of the normal structure.

The pericardium was normal. The heart felt flabby, was small, and when washed free of blood weighed only 8½ ounces. The right auricle was empty; the auriculo-ventricular valve admitted three fingers easily. The valve cusps looked healthy. The right ventricle was also empty. The pulmonary artery and valves appeared quite normal. The left auricle was empty. The mitral valve admitted two fingers. The mitral cusps appeared quite healthy. The left ventricle was empty. There were well-marked plaques of atheroma in the aorta just above the aortic valves. The aortic cusps were healthy. The openings of the coronary arteries were normal and the coronary arteries themselves showed no abnormality. The walls of the four chambers of the heart were of ordinary thickness.

The heart was opened *in situ* before the lungs were removed. A histological examination showed the muscle fibres to be loosely held together, with considerable areas of areolar connective tissue intervening between the fibres. The transverse striation of the fibres was very distinct. The capillary vessels running between the cells were distended with blood corpuscles. Sections were stained with sudan III. and with osmic acid, but there was no evidence of any fatty degeneration present. Sections of the atheromatous plaques showed considerable hyperplasia of the intima and some round-cell infiltration without any fatty degeneration.

Both lungs were congested but healthy. A few pigmented brown spots were noticeable on the surface of each lung. The bronchial glands were large and firm. The papillæ and lymphoid nodules at the base of the tongue were prominent. Both the right and the left tonsils were large and when cut open showed dilated crypts containing offensive cheesy matter. The pharyngeal tonsil was markedly enlarged. In the larynx and trachea no abnormality was noted. There was no evidence of any compression of the trachea. The stomach contained about half an ounce of mucus and was apparently healthy. The solitary lymphoid glands of the small and large intestine and the patches of Peyer stood up in a most striking way above the rest of the surface of the gut. The mesenteric lymphatic glands were large and firm, not unlike the appearance presented by these glands in abdominal tuberculosis, but the glands in this case were of a delicate pink colour, and none were caseous. The appendix was examined macroscopically and microscopically and was normal. The kidneys weighed 5 ounces and 6 ounces and appeared healthy, as did also the two adrenals. The spleen

[1] Proceedings of the Royal Society of Medicine, vol. iii., No. 5, March, 1910.

was small and weighed 3¼ ounces. Macroscopically and histologically it was normal. The pancreas weighed 2¼ ounces; no abnormality was found macroscopically or by microscopic examination. The liver weighed 2 pounds 8 ounces. Histologically the capillaries were found filled with blood, but there was no evidence of chronic congestion. The brain weighed 2 pounds 11 ounces and appeared normal.

A histological examination was made of the bronchial and the mesenteric lymphatic glands; in no case was there any evidence of tuberculosis. The structure of the glands appeared normal, and the condition was one of simple hypertrophy. Histological examination of the thyroid showed it to be a simple parenchymatous goitre. The pituitary gland was not enlarged and its histology was normal. Only one testicle was present in the scrotum; the other was not found. A histological section of the testicle showed a dense fibrous stroma running between the tubules and surrounding them in a firm sheath. No complete spermatozoa were seen.

Medical Societies.

OPHTHALMOLOGICAL SOCIETY.

The Small Flap Incision for Glaucoma.—Congenital Word-blindness.—Hypopyon Keratitis treated by Pyocyanase.—Exhibition of Cases.

A MEETING of this society was held on May 5th, Dr. G. A. BERRY, the President, being in the chair.

Mr. H. HERBERT read a paper on the Small Flap Incision for Glaucoma. Two years ago Mr. Herbert performed a small operation upon eight glaucomatous eyes which had been already briefly described as a form of subconjunctival paracentesis. By means of a narrow Graefe knife a small rectangular sclero-corneal flap was cut subconjunctivally, with its base at the limbus. This flap might be forced forward a little under the conjunctiva by the intraocular pressure. And probably it tended to shrink slightly in volume through being deprived of its direct blood-supply for a time. Firm reunion appeared to have been thus prevented. The results up to date were available in six only of the eight cases. One case was a failure owing apparently to adhesion of the iris to the wound. In the remaining cases the tension had been reduced to normal by means of linear filtering cicatrices. In two of the cases, however, the complete reduction of tension had occupied a period of a few months. The leakage of aqueous was at first insufficient. Two of the patients were shown at the meeting. During the last five months Mr. W. G. Laws and Mr. Herbert had been operating by means of a similar flap, but broader and hence placed usually above, owing to the possible need of iridectomy, basal or complete, to prevent adhesion of iris to the wound or prolapse. These incisions had been made mostly by means of keratomes and of bent narrow blunt-ended knives. Flaps also 2 to 3 millimetres wide had been utilised in some cases made with the narrow Graefe knife at the outer side of the cornea. It was too early to say more about the results of Mr. Herbert's 14 recent cases than that they were very encouraging. In two cases adhesion of iris had formed to both limbs of the small section, yet had not interfered appreciably with filtration. Combined iridectomy, peripheral or complete according to the state of the iris, appeared advisable with the broader incision in cases in which the pupil did not contract well to eserine. It had been performed in three cases only in this series, and secondary iridectomy two days later in one case. By this operation an attempt was made merely to secure with certainty and safety the same linear filtering cicatrix which was sometimes the chance result of an ordinary iridectomy operation. The length and peripheral position of the typical iridectomy incision favoured gaping of the wound and thus tended to produce a filtering scar. In Mr. Herbert's experience a filtering or fistulous cicatrix was the rule after a successful iridectomy and in itself was sufficient to account for the success.—Mr. PRIESTLEY SMITH said he had been struck by the success of the operation and the small degree of disfigurement caused. Mr. W. Allport had, under his (Mr. Smith's) control, operated by the method upon 11 eyes without any failure, and he (the speaker) regarded it as a very valuable improvement in the methods of treating chronic glaucoma and congratulated Mr. Herbert upon it.—Mr. E. TREACHER COLLINS had had no experience of the operation, but desired to know the anatomical difference between a filtration scar and a fistulous scar.—Mr. F. R. CROSS agreed that the establishment of a fistulous opening made a permanent result more likely after operation for glaucoma than without such.—Mr. LAWS said he had performed the operation 14 times and gave the results; there had been no failure or harm in any case. Sometimes, owing to progressive loss of vision, one had to try other methods.—Mr. ALLPORT gave the satisfactory account of 20 cases in which he had performed the operation.

Mr. J. HERBERT FISHER read a paper on Congenital Word-blindness (inability to learn to read). After alluding to some of the previously reported cases of the condition Mr. Fisher reported four others which had come under his own observation in one girl and three boys. In one of the male cases there appeared to be very suggestive evidence of a hereditary and family tendency to the defect; in another there had been considerable flattening of the left side of the cranium at birth, and a remnant of this deformity could still be easily recognised. Mr. Fisher thought it probable that as further examples of the defect were collected the cases would be found to arrange themselves into two groups: (1) the hereditary group, in which the visual memory centre for words residing in the left angular gyrus failed in development (probably in this group a considerable proportion of the female cases would be found); and (2) a group due to limited meningeal hæmorrhage over the same gyrus, the result of birth injury. This group would account for the well-recognised great preponderance of congenital word-blindness of the male sex. Obstetricians recognised the greater size of the head in male than in female infants at birth; the more frequent necessity for artificial assistance and the greater risk to mother and to infant in the birth of male than of female children. Mr. Fisher pointed out that larger meningeal hæmorrhages at the time of parturition and resulting in birth palsies were twice as common in male as in female children. He urged the necessity for special and private tuition for children with this defect of congenital word-blindness. He thought the phonic method of learning to read, making use of the glosso-kinæsthetic centre to aid the visual memory centre, less likely to lead to a satisfactory result than endeavours to train a vicarious visual memory centre in the right hemisphere. For such training he advocated the "look and say" method of learning to read; the child should use the "word" as its unit of observation and study, and not the individual letters. The "look and say" system had been practically developed by Miss Mason of 56, Romola-road, Herne Hill, S.E., in her "Delightful Reading Box" system, which Mr. Fisher had used with a most satisfactory result in one of his cases reported to the meeting.—Dr. F. E. BATTEN discussed the paper, pointing out that Bastian long before 1900 described the condition and reported cases. He (the speaker) thought it difficult to explain word-blindness on the hypothesis that there was an actual defect in the angular or marginal gyrus. Bastian's view was that it was really a commissural defect. Such cases could, as a rule, read figures well, and he knew the case of a butcher boy who could remember accurately the various orders given to him on his round and deliver the meat properly to the respective houses. He (Dr. Batten) was very favourably impressed with the method of teaching such children which had been described by Mr. Fisher.—Mr. TREACHER COLLINS said that he had seen many cases of the condition and had been surprised to find how common it was. They were frequently overlooked, and attributed to sheer stupidity, to the great discomfort of the child. Several of the patients he had seen had been atrocious spellers. If the British system of spelling had been phonetic the defect would not be nearly so noticeable. In Germany, the language there being much more phonetic, such cases were said to be far less common. He thought they had sufficient visual memory for words to enable them to recognise words when they saw them, but not sufficient to recognise when a letter in the word was out of place or omitted. Some could learn by ear, but not from books.—Mr. R. W. DOYNE objected to the name "word-blindness," and he thought the condition was more common in boys than in girls. The defect was a question of degree, and was not regarded as pathological.

Those who were word-blind would read their lessons aloud so as to learn them.—Mr. FISHER replied.

Dr. A. BRONNER (Bradford) read notes on six cases of Hypopyon Keratitis treated by local application of pyocyanase. Many cases of ulceration of the cornea, especially in elderly people, were most difficult to cure, and often ended in complete destruction of the cornea. In some recent cases Dr. Bronner had applied 50 per cent. pyocyanase eye-drops every hour. In every case the pain had disappeared in a day or two, and the ulcer had healed up more quickly and with less consequent opacity of the cornea than under the ordinary method of treatment (galvano-cautery, carbolic acid, sub-conjunctival injections). Of course, atropine drops and hot fomentations were also used. Pyocyanase was a brownish fluid prepared from broth cultures of the bacillus pyocyaneus, at the suggestion of Emmerich and Lowe, by the Institute of Bacteriotherapeutics at Dresden.

Mr. N. BISHOP HARMAN showed a case of Paralysis of the External Rectus, the result of an accident.

Major W. T. MOULD, R.A.M.C., showed a case of Primary Choroiditis, which Mr. DOYNE discussed, and exhibited a tree of heredity concerning cases he had investigated. It was really an exudation, and the sight was not lost until very late in life.

Mr. TREACHER COLLINS exhibited a case showing Yellow Patches scattered through the Iris Tissue in the Stroma.

Mr. L. V. CARGILL showed a patient with Acromegaly.

Mr. M. S. MAYOU showed two cases of Heterochromia Iridis associated with paralysis of the cervical sympathetic in early life.

Mr. J. H. TOMLINSON showed, and illustrated by the epidiascope, Recent Amaurosis with Unusual Cupping of the Disc in a youth.

Dr. A. S. WORTON showed a case of Congenital Arterial Loop Projecting into the Vitreous.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases.

A CLINICAL meeting of this society was held on April 29th, Dr. J. B. HELLIER, the President, being in the chair.

Mr. H. LITTLEWOOD showed: 1. A case in which Peridiverticulitis of the Sigmoid with a Fistulous Opening between the Bladder and Sigmoid had been successfully operated on. The patient was a male, aged 50 years, who had passed fæces and flatus per urethram for four years, during which time he had been unable to work; there was also a stone in the bladder. The abdomen was opened in the middle line; there was a large mass in the lower part of the sigmoid, which was attached to the posterior surface of the bladder near the apex. This was separated with difficulty, and the openings into the bladder and sigmoid were found. The vesical opening was enlarged and the stone removed, the fistulous edges were pared, and the opening into the bladder was closed with a continuous catgut suture going through all the coats, with the exception of the mucous membrane. The mass in the sigmoid was then removed and the bowel united by an end-to-end suture of catgut. The abdomen was closed and a drainage-tube was inserted into the lower end of the wound. The patient made a good recovery. The portion of the bowel removed showed no evidence of malignant disease, but was a typical example of chronic peridiverticulitis of the colon. 2. A case in which Early Malignant Disease of the Upper Part of the Common Bile Duct, involving the cystic duct and producing intense jaundice, had been removed. The patient was a man, aged 65 years, who was in perfect health until about seven or eight weeks before the operation; at that time he suddenly became jaundiced; there were no pain and no fever. The jaundice increased in intensity and at the time of the operation (March 15th, 1910) he was of a greenish-yellow colour. The abdomen was opened just to the left of the middle line, and a growth, producing complete stenosis, was found at the upper part of the common bile-duct, involving the cystic duct. The hepatic duct was divided above the growth and the common bile-duct below; the parts between were removed, together with the cystic duct and the gall-bladder. The common bile-duct was ligatured, and the hepatic duct was sutured to an opening in the upper surface of the first part of the duodenum. The abdomen was closed with gauze drainage and recovery ensued.

Dr. A. G. BARRS showed a man, aged 30 years, with Chronic Sprue (Psilosis). He went to India in 1901 and was quite well to June, 1908, when the illness began with attacks of acute abdominal pain, vomiting, and diarrhœa. The pain usually came on in the night. The diarrhœa, from one to six motions a day, was frothy, copious, and variable in consistency, and dark straw colour. The attacks would last from two to three months, with intervals of about a month. He returned home in December, 1908, and then began to have a sore tongue and tender gums, being unable to eat hot food in consequence. Latterly the abdominal pain and vomiting had been less. He was pale and had lost much weight. The tongue was sore and red, and the pharynx was red. The fæces showed the presence of B. coli and B. enteritidis sporogenes.

Mr. A. L. WHITEHEAD showed a boy, aged 17 years, who had suffered from Chronic Otorrhœa all his life. There had been an external mastoid swelling for three weeks and facial palsy for one week. There was no vomiting, headache, or other symptoms of intracranial extension, except marked optic neuritis, more intense on the affected side. Very extensive mastoid disease was found at the operation, with extensive pachymeningitis externa, the dura mater over the cerebellum, lateral sinus, and cerebrum being diseased, and a large extra-dural abscess above. Recovery was uneventful; some optic neuritis was still present.

Mr. R. LAWFORD KNAGGS showed a man, aged 58 years, in whom Dry Gangrene of the Arm began the day after the crisis of lobar pneumonia. The brachial artery could be seen pulsating at the bend of the elbow, but there was no pulse in either radial or ulnar artery. No albuminuria was present. No bruit could be heard.

Dr. T. WARDROP GRIFFITH showed a child, aged 9½ years, suffering from Adherent Pericardium in whom præcordial thoracostomy had been performed with but trifling improvement. 2. A man, aged 35 years, with Mitral Disease. He had had pleurisy and pneumonia eight years ago, and dyspnœa ever since. There was no history of rheumatism or chorea until December, 1909, when slight pains in the joints were felt. Tracings showed the complete (i.e., non-rhythmical) irregularity of the heart, and that there was no wave in the jugular pulse corresponding to the contraction of the right auricle at its usual time. There was no true crescendo bruit. When the heart was acting frequently the diastolic bruit ran up to the following first sound, but when long pauses occurred the bruit ceased and there was a period of silence separating it from the following first sound. Probably the auricle had passed into a condition of fibrillation; some of the tracings seemed to show this.

Mr. G. CONSTABLE HAYES showed a man, aged 35 years, who was suffering from Secondary Syphilis with Condylomata, which caused symptoms of mastoid trouble in a suppurating ear.

Dr. ALEX. SHARP showed a girl, aged 19 years, suffering from Chronic Œdematous Laryngitis. She was seen about four years ago, on account of urgent dyspnœa, which had developed in the course of a few days. All the soft tissues of the larynx and the lingual tonsil were enormously swollen, and almost occluded the larynx. In spite of prolonged and active treatment, the condition was still very pronounced, and there was only a tiny glottic chink seen on elevating the thickened epiglottis. The vocal cords were unaffected, and there was no pain and no cough. There was no evidence of tubercle, and no specific history. The nature of the case was uncertain.

Dr. H. H. GREENWOOD showed a case in which a Large Hydronephrosis had been caused by Impaction of a Calculus in the Ureter. The patient was four months pregnant. Laparotomy was performed on May 2nd, 1909; a flap of peritoneum was raised, the ureter incised longitudinally, and the stone extracted. Urine flowed in very small quantity. The wound was sutured, a flap of peritoneum was brought over and sutured, and the abdominal wound was closed. Recovery was uneventful. On Nov. 22nd the patient was delivered of a healthy full-term child; the hydronephrosis was then no longer palpable.

Dr. W. H. MAXWELL TELLING showed: 1. A female, aged 26 years, suffering from Graves's Disease with Unilateral Exophthalmos. 2. A woman, aged 56 years, with Pernicious

Anæmia due to Oral Sepsis. There had been marked glossitis, pyrexial attacks, and active delirium. Treatment consisted of vigorous disinfection of the mouth, arsenic, and sulpho-carbolate of soda. There had been marked improvement in the anæmia, and the mental condition was then almost normal.

Dr. A. BRONNER showed two cases of Asthma of 10 and 23 years' duration respectively treated successfully by the application of the galvano-cautery to the nasal septum and the lower turbinates.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Demonstration. — Exhibition of Patients. — Gonorrhœal Urethritis.—Tuberose Sclerosis.—Ménière's Disease and Facial Paralysis.

A MEETING of this society was held on May 4th, Dr. BYROM BRAMWELL, the President, being in the chair.

The following gentlemen were elected corresponding members of the society: Sir W. Watson Cheyne, Bart.; Dr. A. McPhedran, Montreal; and Sir Thomas Clifford Allbutt, K.C.B.

Dr. D. CHALMERS WATSON gave a demonstration to show that many of the commercial preparations of lactic acid organisms at present on the market were useless, and, indeed, some were even harmful.

Mr. DAVID WALLACE showed: 1. Fracture of the Right Olecranon Process in a man. The accident happened on April 11th and was the result of direct violence; there was marked displacement of the upper fragment. Believing that he could more quickly and efficiently give the man a useful limb, Mr. Wallace employed sutures, and five days later movements were commenced. Three weeks after operation the osseous union was good and movements were fairly free. 2. A case of Volkmann's Ischæmic Paralysis in a boy undergoing treatment. The affection was only occasionally met with, and this extreme case occurred in a boy aged 14 years. When aged 11 he suffered from a compound fracture of the bones of the left forearm. The injury was treated with splints, and at the end of one month symptoms of the present condition commenced. Eight months after the accident an operation was performed either with the object of shortening the bone or the muscles. On admission the degree of extension of the hand was very small, the wrist remained almost at right angles, and it seemed impossible to cure the condition without operation. Mr. Wallace removed the proximal row of carpal bones, and in this way the hand was brought into a fair degree of extension. The hand and fingers were then treated with splints, and the boy could now shut his hand and extend the fingers to some extent; the operation was performed on April 14th. 3. A woman who suffered from Hæmatogenous Infection of the Left Kidney. This organ was excised, and though at the time the patient had a temperature of 102° F. and was very ill, she had made a good recovery. 4. A boy showing the good results of operation for Undescended Testicle on both sides.

Dr. NORMAN WALKER showed a girl, aged 15 years, to illustrate the beneficial effects of treatment by carbon dioxide snow in xeroderma pigmentosum. The case began as one of freckles, which soon developed into numerous malignant tumours on the face and orbit. The lesions had completely healed up and the girl was now apparently cured. If the patient could be kept alive to the age of 19 the tendency to malignancy in such cases seemed to disappear.

Dr. GEORGE MACKAY showed a young man who while working at a steel punching machine two weeks ago received a fragment into his left eye. The fragment remained in the eye for 48 hours before removal, which was carried out by making an incision and using the magnet. It was a rare occurrence for such a foreign body to lodge in the eyeball without doing much damage, but in this case a perfect cure without complications seemed to have been effected.

Mr. ALEXANDER MILES read a paper on the Treatment of Acute Gonorrhœal Urethritis in the Male by Passive Congestion. He said that those who had treated such cases by urethral injections must have felt dissatisfied with the results. The very multiplicity of the applications recommended and the variety of the means employed indicated that no one method had yielded satisfactory results. He did not doubt but that if the surgeon could himself administer treatment and control the patient's *régime* benefit would result, but the nature of the affection rendered such conditions unattainable. To intrust the patient himself with a syringe was, he thought, worse than useless. During the first few months in which Mr. Miles had charge of the lock wards, his experience in the use of injections was sufficient to make him look about for a better method of treatment. The success of Bier's method of treating acute inflammatory conditions suggested that it might be employed in the treatment of gonorrhœa affecting the anterior urethra. A constricting bandage applied to the root of the penis did not give encouraging results, and so an apparatus consisting of a glass cylinder about 7 inches long and 2 inches in diameter was devised. A conical rubber flange made a tight union with the root of the penis, and air was sucked out from a lateral opening by a suction pump. After the patient had passed urine the apparatus was applied and the air exhausted by three or four strokes of the piston. The penis at once became turgid, swollen, and bluish in colour as in priapism, and a few drops of pus exuded from the urethra. No pain or discomfort should be experienced. In from 10 to 15 minutes air was allowed to enter, and after an interval of five minutes air was again exhausted. This was repeated two or three times and the whole *séance* should last about one hour. The treatment was employed once daily and gave better results than when applied more frequently. The discharge was increased in amount and might be tinged with blood. In mild cases a single daily application for 20 minutes proved quite efficient. While the method was in trial films were taken in each case immediately before, and a short time after, the use of the suction bell, and were compared. The results were remarkably constant; there was a distinct increase in the number of fresh, well-formed polymorph leucocytes in the discharge examined after the bell had been used, and the proportion of intracellular cocci was much greater. In one case previous to the application there were numerous extracellular cocci in the discharge, but after its use the cocci were nearly all intracellular and appeared to be less numerous. It would appear that the greater number of intracellular organisms found after suction depended not on an increased power of the individual cells to ingest cocci, but on the presence of a greater number of leucocytes capable of ingesting them. It was not unlikely that an increase in the opsonic power of the patient's serum resulted from the hyperæmia and that thereby the organisms fell an easy prey to the phagocytes. From an experience of over 300 cases of acute gonorrhœa of the anterior urethra treated by this method, Mr. Miles thought that it might be claimed to be more cleanly than injections and that the patient could more easily carry it out safely and efficiently for himself. The method was available in cases of phimosis where the œdema of the prepuce precluded the use of injections. The method was not applicable to cases of chronic purulent discharge and gleet, causing in them marked increase in the discharge, pain, and scalding. In acute cases this treatment even after a single application lessened greatly the pain and scalding on micturition and abolished these by the second day. In the majority of cases where the patient came early for treatment and persevered with it the purulent discharge ceased in about 14 days, though a slight gleety discharge persisted for about a week longer. In a few cases the discharge disappeared after only three or four applications, while in others it continued for three or four weeks. The greatest advantage, however, lay in the almost complete absence of complications. Only in two cases did epididymitis develop. This infrequency in epididymitis connoted a corresponding rarity in the occurrence of posterior urethritis, and in the cases treated by Mr. Miles the classic symptoms of the latter affection were seldom present and were never severe, No case of acute prostatitis or prostatic abscess, cystitis, or of peri-urethral abscess was met with. In only two or three cases did a mixed infection bubo develop. Gonorrhœal arthritis supervened in two cases, and it was interesting to note that in one of these in 15 separate examinations made of the discharge the great majority of the cocci were extra-cellular, showing that the opsonic power was abnormally low. During the first year no internal treatment was employed. The next year balsams, usually in the form of sandal-wood oil or alkaline mixtures, were given in addition.

The difference in the results was not striking, but the addition of drugs seemed on the whole an advantage.

Dr. J. S. FOWLER and Dr. W. E. CARNEGIE DICKSON communicated a paper on Tuberose Sclerosis. Tuberose sclerosis was a rare developmental disease, interesting pathologically on account of the fact that in many cases tumours of the heart, kidneys, and skin were associated with a peculiar form of cortical sclerosis, and clinically because it gave rise to a fairly definite type of mental defect. The case which formed the subject of this paper was, briefly, as follows. A female infant, aged one year, was admitted to the Sick Children's Hospital suffering from convulsions. Her previous history was good, and she had apparently developed like a normal child up to the beginning of her present illness. On admission she was semiconscious and suffering from clonic spasm of the left side of the face. The limbs were flaccid, the knee-jerks were active, Kernig's sign was absent, and the pupils were equal with left internal strabismus. On lumbar puncture the cerebro-spinal fluid was found to contain about 40 lymphocytes per cubic millimetre. After admission the fits ceased and did not recur, but the child remained unconscious, and died from intercurrent empyema a month later. On post-mortem examination there were typical tuberose sclerosis and a tumour of the heart. In the somewhat extensive scattered literature dealing with tuberose sclerosis most of the papers deal entirely with the pathology of the disease, but records of 25 cases have been found on which clinical details are given, and from these the main features seem to be as follows. A neuropathic heredity is commonly met with; the average ages of the parents are 33 and 27 years, so that the disease does not tend to occur at the extremes of reproductive life. Syphilis is not a causal factor. Epilepsy and mental defect are invariable, and the former is in many cases the earliest symptom that anything is wrong with the patient. The convulsions set in during the first year in 50 per cent. of the cases. The convulsions are not specially characteristic; they usually occur in small series at short intervals; Jacksonian and minor epilepsy may also occur. Patients are always defective, usually imbecile. Most cases have been found in institutions for the feeble-minded. The mental condition usually deteriorates along with the progress of the epilepsy. It is somewhat remarkable that notwithstanding the extensive disease of the cortex other nervous symptoms are rare. The most interesting feature of the condition is the association with the brain lesion of other tumours. Renal tumours were present in 17 out of 26 cases. They are nearly always bilateral, and are described in most instances as "cancerous." Heart tumours are probably nearly as common, but in the series studied only four are mentioned. Cases with heart tumour usually die in infancy and are recorded in the literature as congenital tumour of the heart. The tumours are rhabdomyomata. Tumours of the thyroid, thymus, duodenum, and spleen have been reported. From a clinical point of view adenoma sebaceum, which was present in 13 of the 26 cases, is very important, because it is the most readily detected of the tumours, and most likely to lead to a correct diagnosis. It is an affection of the skin of the face which is not uncommon in institutions for the feeble-minded, and has been recognised by dermatologists as associated in many instances with backwardness. The tumours are masses of sebaceous glands embedded in a more or less vascular matrix—sebaceous nævus. The disease tends to shorten life. Two-thirds of the patients died by the sixteenth year. Death may be due to the disease directly either from kidney tumour or the occurrence of acute epilepsy or to some accidental cause. The diagnosis depends on detecting some of the associated tumours in a case which belongs to the group of epileptic imbecility. Some of the tumours of the kidney have been large enough to be felt or have given rise to characteristic urinary changes. It is only within the last year or two that any attempt has been made to diagnose the disease during life, and the credit for having drawn attention to the clinical aspects of the disease belongs in the first instance to Vogt of Frankfort. The following is a synopsis of the post-mortem and histological examination of the case of the infant recorded above. (Summary: Tuberose sclerosis, rhabdomyoma of the heart; immediate cause of death broncho-pneumonia, empyema, and collapse of lung; general toxic changes in organs; no tumours in skin, kidneys, or remaining organs.) The brain showed numerous hard nodules mostly in the cerebral cortex, the arrangement of the convolutions of which was not appreciably disturbed, nor was the pia-arachnoid adherent over them. These nodules—a dozen or more in each hemisphere and varying from the size of a pea to that of a small walnut—consisted of neuroglial overgrowth, with corresponding diminution of the nerve elements proper—cells and conducting fibres. The surviving nerve-cells were increased in size, and showed all stages of degeneration and disintegration. Numerous smaller nodules projected into the lateral ventricles. In the right auricular appendix of the heart there were two small nodules of rhabdomyoma. The histological appearances found in these correspond to the classical descriptions of this extremely rare tumour—viz., very irregular, highly vacuolated cells, possessing "tumultuously" interlacing striated muscular fibres. No lesions of special importance, other than acute toxic changes, were found in the kidneys, liver, and other organs.—Dr. JOHN THOMSON and Dr. NORMAN WALKER discussed the question of the presence of adenoma sebaceum in this disease.

Dr. ALEXANDER BRUCE and Mr. J. S. FRASER read a paper on a case in which Ménière's Symptoms appeared in an Apoplectiform Manner along with Facial Paralysis. Attention was called to the confusion which existed on the subject of Ménière's disease, and it was suggested that this term should be given up in favour of that quoted above. Ménière's symptoms were: deafness, tinnitus, giddiness, nausea, vomiting, cerebellar ataxia, nystagmus, fainting, a feeling of pressure in the head, cold sweats, and diarrhœa. All these symptoms, however, need not be present. It was pointed out that Ménière's symptoms were merely those of irritation or disease of the membranous labyrinth and eighth nerve, and that they might be present in any pathological condition affecting the labyrinth or acoustic and vestibular nerves; they formed a "disease picture" analogous to those of excess of thyroid secretion—tremor, rapid pulse, and exophthalmos. A classification of conditions affecting the inner ear and auditory nerve was given under the following headings: (1) variations in intralabyrinthine pressure or excessive movements of the labyrinth fluids; (2) electrical stimulation; (3) vascular congestion or anæmia; (4) labyrinthine hæmorrhage (traumatic, caisson disease, in bleeding disease, in the exanthemata); (5) acute inflammations of labyrinth; (6) chronic inflammations of labyrinth; (7) neuritis of auditory nerve; (8) hæmorrhage into auditory nerve (the present case came under this heading); (9) degenerations of the auditory nerve, ganglia, and nerve endings; (10) tumours of the auditory nerve; and (11) neuroses (pseudo-Ménière's disease). In the present case the patient was a man, aged 65 years, with a history of rheumatism but not of syphilis. After a day of exposure to cold he went to bed feeling well but woke up the next morning suffering from pain in the head and limbs, extreme giddiness and tinnitus, deafness in the left ear, and left-sided facial paralysis. He remained in bed for a week, and when he did get up had to hold on to the furniture. When seen at the Royal Infirmary two months later he had complete facial paralysis on the left side but no loss of taste; the middle ears were almost normal, but hearing tests showed inner-ear deafness on both sides, most marked on the left side; there was considerable disturbance of balancing; the arterial walls were thickened, and there were cardiac and chronic pulmonary lesions; there was no evidence of leukæmia. Potassium iodide, rest in bed, and electricity did not cause any improvement. The patient died six weeks later from syncope. The post-mortem examination revealed fatty dilated heart, chronic pulmonary tuberculosis, subacute interstitial nephritis, and milky thickening of the pia-arachnoid. The condition of the facial nucleus has been previously recorded by Dr. A. Bruce and Dr. J. H. Pirie.[1] The method of preparing the inner ear for examination (celloidin method) was described. The inner ear was almost normal; there was no hæmorrhage in the cochlea, vestibule, or canals; there were degenerative changes in Corti's organ in the basal coil of the cochlea. In the internal auditory meatus there was, however, a considerable amount of hæmorrhage between the epineurium and the seventh and eighth nerves; the arteries were markedly thickened and the middle coat hyaline; the hæmorrhage did not extend into the aqueduct of Fallopius nor into the modiolus of the cochlea.

[1] Review of Neurology, 1908, p. 635.

A demonstration was given of photomicrographs, showing the condition of the inner ear and auditory and facial nerves. Dr. Bruce and Mr. Fraser had only been able to find one other record of microscopic examination of the inner ear in a similar condition.[2] All others were in cases of leukæmia.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

The Prevention of Small-pox.

A MEETING of this section was held on April 15th, Professor E. J. MCWEENEY, the President, being in the chair.

Dr. T. P. C. KIRKPATRICK delivered an address dealing with the history of the methods that have been from time to time adopted for the prevention of small-pox. He also mentioned the palliative effect of inoculation which was practised in India and China at an early period and which Lady Mary Wortley Montagu introduced into England from Constantinople in the year 1723. This practice, though it lessened the individual liability to death, rather tended to increase the number of those attacked by the disease, and towards the close of the eighteenth century it was estimated that in England 1 in every 14 persons was attacked by the disease, and of those attacked 1 in 5 died. In the beginning of the last quarter of the eighteenth century an attempt was made by Dr. Haygarth of Chester to deal with the disease on modern preventive lines, but his methods were only very partially adopted. It was at this juncture that Dr. Edward Jenner introduced the practice of vaccination. Statistical tables were shown to illustrate the effect of vaccination on the small-pox death-rate in various countries. The address concluded with an account of the methods used for the prevention of small-pox in Germany, where reliance was placed on effective vaccination and revaccination. In England, however, the same reliance could not be placed on the protection of vaccination owing to the absence of any system of compulsory revaccination.

Sir JOHN MOORE said that in his opinion the failure of the present system of dealing with small-pox was in the lack of revaccination. Taught by the lesson of the pandemic of 1870–71, the Parliament of the German Empire passed a compulsory vaccination law in 1874 in accordance with which every child must be vaccinated before reaching the age of one year, and must be revaccinated before 12 years. In Germany the hospital treatment of small-pox presented no difficulty because there was no fuel to catch fire when a spark alighted. Primary vaccination in infancy conferred an absolute immunity for the time being; but that immunity was transitory, and the necessity arose for revaccination at an age approaching puberty. A terrible craze of anti-vaccination was creeping into Ireland, and in the south-eastern part of Leinster there was a decided rebellion against vaccination.

Dr. THOMAS DONNELLY said that something ought to be done to counteract the wave of antivaccination, and one of the best things would be to educate the people by having lectures such as the one which the meeting had just listened to delivered in various centres throughout the country.

The PRESIDENT said that he agreed with the suggestions as to the education of the people. He was responsible for the bacteriological purity of the lymph which was issued to vaccinators in Ireland, and he could testify that it was produced with the utmost cleanliness and asepticity. Vaccine lymph had a very distinct bacteriological flora, which consisted of organisms found in the skin of the calf. When taken directly from the skin some had a certain pyogenic power, like the staphylococci found in the human skin, but after subjection to the action of glycerine they seemed to lose that power. The method of vaccinating direct from the calf to the arm had been found to give too vigorous a local reaction; the micro-organisms had not been attenuated, and the method was very properly not practised in Ireland. He eulogised the services of Dr. S. M. Copeman in advocating the glycerination of lymph as a means of getting rid of these organisms.

[2] Alt and Pineles: Wiener Klinische Wochenschrift, 1896.

HARVEIAN SOCIETY OF LONDON.—A clinical meeting of this society was held on May 5th at the Paddington Infirmary, Dr. H. J. Macevoy being in the chair.—The following cases were shown by the medical superintendent, Dr. Maurice F. Squire: (1) Aneurysm of the Innominate Artery; (2) Tumour of the Breast; (3) Tuberculous Onychia; (4) Suppurative Onychia and Rheumatism; (5) Hæmophilia; (6) Hemi-anæsthesia in a Man; (7) Sclerodermia and Arterio-sclerosis; (8) Myopathic Atrophy; (9) Muscular Atrophy following Plumbism; (10) a case recovering from Facial Paralysis following Mastoid Operation; and (11) Tuberculous Kidney. A specimen was also shown, being the main arteries from a case operated on some six years previously for supposed Innominate Aneurysm. The right subclavian and common carotid had been tied and the case was regarded as a cure. The specimen showed some degree of enlargement of the calibre of the innominate artery and thickening of its walls, but no trace of a previous aneurysm. The right subclavian was occluded at the site of the ligature, but the right common carotid was patent and presented an aneurysm at the site of the ligature.—The cases and specimens were discussed by Dr. Macevoy, Dr. G. de B. Turtle, Mr. E. Laming Evans, Mr. C. E. A. Huddart, Mr. F. C Dodsworth, and Dr. G. A. H. Barton.—The meeting concluded with a vote of thanks to Dr. Squire.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The spring meeting of the Northern and Midland Division of this association was held at the kind invitation of Mr. C. T. Street at Haydock Lodge, Newton-le-Willows, on April 19th. Mr. Street presided.—Mr. E. P. S. Gane read a paper on Notes on the Treatment of General Paralysis by means of Serum. He pointed out how the treatment by specific serum had been brought prominently forward by Dr. Ford Robertson, whose investigations led him to believe that the disease is caused by a micro-organism allied to the diphtheria bacillus. Mr. Gane now wished to bring forward his experience of cases he had treated with the diphtheria antitoxin. The advantage of the serum was that it was standardised and the strengths were definitely graduated. The number of cases in which he tried the serum were six, all of which were general paralytics. The first four cases were disappointing and the fifth could only have been changed by a miracle. In the sixth case after treatment the grandiose ideas and delusions left and mentally the patient showed improvement. He believed that the temperature reaction, temporary excitement, and alteration or improvement in the mental symptoms were probably due to some absorptive process set up by the serum and not to any specific action. In the cases mentioned the disease was so far advanced, the probable permanent destruction of nerve tissue so considerable, that little more than arrest of the process could be expected from the treatment and a transient change for the better.—The paper elicited an interesting discussion in which a number of the visitors present took part. An interesting point brought out was the question of the diagnostic value of the serum in the early stages of general paralysis.—Dr. A. J. Hall of Sheffield read a paper on Insanity following Carbon Monoxide Poisoning, quoting two cases occurring in the same house and under similar conditions. The first was a woman, aged 33 years, who was found unconscious in the bathroom soon after going for a hot bath. She showed most of the signs of CO poisoning, but there was no smell of gas and the "geyser" was turned off. By next day she had completely recovered. The other case was that of her *fiancé* who had been staying a week-end in the house and went to have a hot bath prior to going away on the Monday morning. On bursting open the door he was found unconscious and the room was full of gas; the geyser was full on but with the light out. There was no doubt as to the cause and the symptoms were typical, but instead of complete recovery the patient was dazed and confused, and had loss of memory and incontinence of urine and fæces. This condition continued practically unchanged up to the day of his death, which took place 17 days after the poisoning. Dr. Hall then discussed the question whether the mental symptoms were entirely due to the poison, or was the case one of suicide, there being some prior mental derangement. The opinion of a professor of jurisprudence was quoted: "Whenever an obscure death occurs in a patient about to be married it is suicide."—Remarks on the paper were made by Mr. G. E. Mould, Dr. Cross (who

described a case he had had under treatment), and others.—Mr. Street then opened a discussion on the question, "Are we doing as much in the form of treatment of mental disorder as we might do?" He said that the two points which prompted him to ask the question were: First, the general idea that nothing was done in the way of treatment in asylums, and, secondly, that the recovery rate did not increase. Though much had been written in the way of treatment of the insane, yet treatment did not appear to have yielded many results; the recovery rate had not increased during the past 30 years. He advocated a higher form of moral treatment than the usual occupation, recreation and amusement, a more intimate knowledge of the mental condition of every patient, and particularly a more frank and open method of dealing with it. He believed in discussing a patient's mental symptoms freely with him, whether they were delusions or suicidal inclinations, and had found this method to yield good results, especially in cases of melancholia and alcoholism.—Several members took part in the discussion afterwards.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held at Preston on May 6th, Dr. W. K. Walls (Manchester) being in the chair.—Dr. A. J. Wallace (Liverpool) read a note on Vaginal Subtotal Hysterectomy. He stated that when removing the uterus per vaginam for small fibroids or for persistent uterine hæmorrhage the idea had occurred to him that removal of the whole uterus was an error, because it prolonged the operation and increased the trouble from bleeding, whilst removal of the cervix permanently weakened the pelvic floor and led to alterations in the relations of the vagina. He therefore adopted the following plan of removing the corpus uteri only. The utero-vesical pouch was opened and the corpus uteri brought out into the vagina. The posterior vesical peritoneum was then sutured to the posterior peritoneum of the cervix uteri; thereby the corpus was rendered extraperitoneal and the peritoneal cavity was closed. The broad ligaments were next sutured and divided as far down as the os internum, and the uterine arteries were ligatured as they bent externally. The corpus uteri was cut away from the cervix, and the anterior and posterior walls of the cervical stump were sutured together. The sutured ends of the broad ligaments were now sewn to the cervix and the vaginal wound closed, a gauze strip being left in the potential cavity behind it.—Dr. W. Fletcher Shaw (Manchester) read a paper on Some Points in the Prognosis of Eclampsia. He based the following conclusions on the results of 46 cases, treated at St. Mary's Hospital during the years 1906–7–8; there were three specially bad prognostic signs in eclampsia: (1) a small amount (less than 10 grammes per litre) of albumin during the eclamptic stage; (2) a high temperature (over 100° F.); and (3) post-partum onset of symptoms. A very large percentage of cases with one of the first two symptoms ended fatally (61 per cent. of 21 cases and 57 per cent. of 18 cases respectively); with the two symptoms combined the prognosis was the very worst (all 12 cases died); with neither of the symptoms the prognosis was extremely good (all 7 cases recovered). The third symptom warranted a very bad prognosis (only one out of eight recovered).—Dr. H. Briggs (Liverpool) showed a recent water-colour drawing from a case of Kraurosis or Leucoplakia Vulvæ under his care, taken for the purpose of testing the conclusions of Dr. Comyns Berkeley and Dr. Victor Bonney, contained in their paper read before the Royal Society of Medicine on Nov. 11th, 1909, that these are two distinct diseases. Dr. Briggs said that both in the laboratory and at the bedside confusion continued as before; the microscopical characters of the tissue changes in the vulva corresponded to those met with in the tongue in leucoplakia. There was superabundant fibrous tissue and no evidence of cancer. On the perineum and around the anus the skin was involved, but the thighs had escaped. The vestibule was affected. An attempt to separate the two diseases in this instance had failed.—Dr. D. Lloyd Roberts (Manchester) reported a case of Pregnancy complicated by a Perinephritic Abscess. In spite of free drainage through a lumbar incision, and the passage of a satisfactory amount of urine, the patient died six days later. A six months' child was born alive during the night after the operation. Post mortem the kidney showed numerous abscess cavities lined by lymph which contained streptococci.—Dr. W. Blair Bell (Liverpool) recorded two cases of Pelvic Tumours associated with Acute Appendicitis. In the one case the gangrenous appendix and the body of the uterus, which contained multiple fibroids, were removed; in the other bilateral ovarian cysts and the perforated appendix. Both cases ultimately recovered.—The following specimens were shown: The President: Tubes and Ovaries from a case of Recurrent Streptococcal Salpingitis.—Dr. J. E. Gemmell (Liverpool): A Uterus removed for Fibroids Complicating Pregnancy.

Reviews and Notices of Books.

A System of Syphilis. In Six Volumes. Volume III. Oxford Medical Publications. Edited by D'ARCY POWER, M.B. Oxon., F.R.C.S. Eng., and J. KEOGH MURPHY, M.D., M.C. Cantab., F.R.C.S. Eng. With illustrations. London: H. Frowde, and Hodder and Stoughton. 1909. Pp. 279. Price £2 2*s.* net; 6 Vols., £10 10*s.* net to subscribers.

THE first section in the third volume of this system deals with Syphilis of the Viscera and is written by Professor Osler and Dr. Alexander Gibson. As might be expected from the large clinical experience of the authors this section is most excellently written. It is essentially practical and illustrated by a number of interesting cases with full clinical histories. Chapter VI., dealing with syphilitic affections of the liver, is perhaps the best and should prove of much help to the practitioner. The section is illustrated with 23 plates, and of these some of the coloured reproductions of microscopic sections are particularly good.

The article on the Clinical Aspects of General Paralysis is contributed by Dr. Charles Mercier. He points out that while syphilis plays a large part in the production of this disease, and, indeed, the chief part, only about 2 per cent. of those affected with syphilis develop general paralysis, so that some other factor, and that a very powerful one, must come into play. What is this factor; and how can the fact that general paralysis is almost unknown in China and Japan, where syphilis is very common, be explained? Dr. Mercier believes that the factor is overwork on the part of the brain, since this disease affects mainly active, energetic, strenuous, successful, busy men. May we then expect that, as Western civilisation spreads among the Japanese, and as the problem of attaining success in life becomes more and more difficult with increasing competition in commercial and other pursuits, this disease will become more frequent among these people? It is true that at the present time these Oriental races are fatalists and less susceptible therefore to anxiety, worry, and depressing influences than are Western nations, but this is likely to be less and less the case in future years. Dr. Mercier is inclined to believe with Dr. F. W. Mott, that there may be a special variety of the spirochæte of syphilis which leads to the development of general paralysis. In an attempt to explain the periodicity of the crises and the gradual improvement that takes place between one crisis and another he suggests the following explanations. Either the poison is poured into the blood in intermittent gushes corresponding with the time of the crises, or it is supplied continuously but does not produce its critical effect until it reaches a certain saturation point, or until the resistance of the body gives way suddenly after a long and equal struggle.

Dr. Castellani contributes the section on Yaws and states in detail his reasons for believing that this disease is distinct from syphilis and is due to the treponema pertenue. He finds the organism constantly in the primary lesion and in the unbroken papules of the general eruption; and although he has not been able to demonstrate it yet in the blood, its presence there is proved by the fact that monkeys inoculated with the blood develop typical yaws lesions in which the

treponema is abundantly present. Further, if the monkeys are inoculated with material from the lesions of yaws whence the treponema has been removed by filtration they do not develop the disease. That yaws is not syphilis seems to be proved by the following facts: patients suffering from syphilis may contract yaws, and monkeys inoculated against yaws may contract syphilis and *vice versâ*. The photographs given illustrating the various skin lesions of the disease are very interesting.

The Legal Responsibilities of Medical Men with regard to Syphilis are many and of great importance. The late Dr. Stanley B. Atkinson discusses in detail the important matters of clinical negligence whether by omission or commission, and professional secrecy and defamation of character. He quotes with approval the words of Junius, "a medical adviser must be the sole depository of his patients' secrets which shall perish with him." It is to be remembered that while the medical faculty, like the other professions, has formed a code of etiquette binding upon its members, yet there is no legal sanction for this custom, and the confidence claimed by medical men is not recognised as binding by a court of law.

The importance of syphilis to life assurance offices is very great, and the question as to the amount of loading required for the lives of persons presenting signs of this disease, or giving a history of its occurrence in the past, is one which is always exercising the medical officers of life insurance companies. Dr. E. M. Brockbank writes upon this subject, and after considering the effect of syphilis as an etiological factor in the production of a number of diseases, he devotes a chapter to the experience of assurance companies in the mortality of syphilitics. After considering at length the opinions of many of the medical referees of the large companies on this matter, he comes to the following conclusions, which will be accepted by all who have had much experience of these cases. A syphilitic proposer is, *ceteris paribus*, not so good a life as a non-syphilitic proposer. Only those syphilitic proposers who are first-class lives should be eligible at any rate of premium. No syphilitic proposer should be accepted until at least three years have elapsed since the date of infection without any secondary or tertiary symptoms having appeared in the interval. No proposer showing any signs of the disease or acquiring the disease after 40 years of age should be accepted.

The concluding chapter deals with the Serum Diagnosis of Syphilis, and is written by Dr. Haldin Davis. He gives a clear account of the principles on which the method is based and of the various procedures for carrying it out. While it is true that no healthy individual ever gives Wassermann's reaction, yet, unfortunately, it does not occur in every case of syphilis; thus, taking all cases of syphilis together, about 85 per cent. give the reaction. No doubt as a result of further investigations some adequate explanation will be found to account for these exceptions. One of the most interesting features of the serum test is that it disappears under the influence of treatment, and in this property we appear to have a scientific method of determining whether or not the treatment has been sufficient to cure the patient. In the same way, as Dr. Davis points out, the application of this test will enable us to decide with much greater certainty the time at which it is safe for a person who has acquired syphilis to marry.

The third volume of this system, like the one preceding it, contains a good deal of repetition. No doubt this is in part inevitable, but the editors might have exercised more supervision in this direction, and so obtained advantage of diminishing considerably the size of the whole work. The present volume is well up to the standard of the first two, and the whole is a credit both to the authors and to the editors, although the latter have not used their powers of control to a due extent.

Quain's Elements of Anatomy: Descriptive Anatomy of the Peripheral Nerves and of the Organs of Special Sense. By E. A. SCHÄFER, Professor of Physiology and Histology in the University of Edinburgh; and J. SYMINGTON, Professor of Anatomy in the Queen's University of Belfast. Part 2, Vol. III., Neurology. With 321 figures, many in colours; one plate (coloured). London: Longmans, Green, and Co. 1909. Pp. 384. Price 15*s.* net.

IN THE LANCET of Dec. 5th, 1908, pp. 1674–75, we gave an account of Part 1 of Vol. III., dealing with the central nervous system, and we have now before us Part 2 of the same volume "containing the descriptive anatomy of the peripheral nerves and of the organs of special sense." The three parts which have been issued complete two of the four volumes which will constitute the whole work, and it is now possible to estimate roughly the leading features of the new edition of the standard British work on the anatomy of the human body. The editors had a most difficult task before them in revising this volume; neurology has been revolutionised and its basal literature largely rewritten since the last edition appeared 15 years ago. While freely commending many of the alterations and improvements which mark this edition, and especially the part now under review, there are certain omissions which, in our opinion, will gravely endanger "Quain's" premier place among the world's text-books on anatomy. The chief of these is the almost complete omission of references to literature and to authorities. We do not say that contemporary research is not sufficiently reflected in the text of the new edition, but we do say that the inquiring medical student and practitioner will receive a very scanty degree of assistance from the British standard work if he wishes to carry out research in anatomy. The door to research is, as it were, shut in his face, and he has to resort to German and French works to discover the present state of knowledge in any particular subject of inquiry.

The section dealing with the distribution of peripheral nerves was so completely and efficiently revised by Professor G. D. Thane in the last edition that Professor Symington's task was rendered comparatively easy in the present. Recent observations by Cushing, Bolk, and Frohse have been added, mostly in small text, but Bardeen's work receives much less attention than it deserves. Head's well-known figures are retained to illustrate the segmental distribution of nerves, but no diagrammatic representation has been given of the numerous experimental and clinical observations which have been made in recent years and which in some respects give a more accurate conception of nerve distribution than Head's classical researches and illustrations. We think, too, that Professor Symington, in introducing Fig. 112—a transverse section of the orbit, eyeball, muscles, and fascia—to replace a figure from Gerlach, has substituted an inferior illustration for one which was excellent. A similar criticism may be made regarding an illustration (Fig. 298) of the lateral wall of the nasal cavity. The former illustration (one by Professor Schäfer) was, in our opinion, more accurate and clear than the one which has replaced it. On the other hand, praise must be given to the new figures which illustrate the middle ear and its relations. Professor Schäfer has introduced many new and excellent figures to illustrate recent advances in our knowledge of the minute structure of the eye and ear.

If in some respects the present edition falls somewhat short of the high ideal expected in the leading standard work of its kind, we are not blind to its great merits and also to the most difficult problem which at present faces both

its publishers and editors. They have to meet the competition of the great standard works now published or being published in Germany and France, and at the same time keep "Quain" within the limits required by the majority of medical men and students. The editors appear to have adopted a middle course, but in our opinion no middle course is possible. "Quain" must be what it has been, and in many respects still is, the leading work of its kind, if it is to continue to receive the universal support of anatomists and of their pupils.

Das Lymphgefässsystem. Von Dr. PAUL BARTELS, Privatdozent der Anatomie und Anthropologie an der Universität Berlin. With 77 illustrations (mostly in colour). Jena: Gustav Fischer. 1910. Pp. 280. Price 12 marks.

THE energy with which the anatomists of all countries have recently applied themselves to a re-investigation of the lymphatic system of the human body arose from a minor alteration of technique made in 1896 by Dr. D. Gerota, now professor of anatomy in Bucharest. Gerota discovered that Prussian blue suspended in turpentine and ether made a most serviceable "mass" for the injection of lymph vessels. That apparently trifling innovation has given us, in the course of 14 years, a more complete, detailed, and practical picture of the lymph system of the human body than was formerly at the disposal of medical men. The picture drawn by Dr. Bartels is clear, accurate, and complete; he has produced a work which will serve anatomists and surgeons throughout the world as a standard of reference for many years to come. To the published accounts of a past and present generation Dr. Bartels has added a personal experience derived from ten years of active investigation.

The first chapter, the result of much patient research, gives a historical summary of our knowledge of the lymphatic system. The history is one of brief periods of activity followed by long periods of rest. The discoveries which led to our present conception of the lymphatic system were, according to the author of this work: (1) the discovery of Asellius of Pavia in the earlier part of the seventeenth century that lacteals were vessels, not nerves; (2) Harvey's discovery of the circulation at the same period; (3) Rubeck's discovery (1650) that the lacteal system ended in the veins; (4) the clear proofs given by William Hunter, Cruickshank, and Hewson (1750–1770) that the lacteal and lymphatic vessels were parts of the same system and that the lymphatic system permeated the whole body; (5) the introduction of quicksilver as an "injection mass" by Nuck towards the end of the seventeenth century and the marvellous (and apparently final) results which Mascagni obtained by this means in the earlier part of the nineteenth century; and (6) the introduction of the Gerota method in 1896.

A full description of the various methods used for injecting and examining the lymph system is given in Chapter II. Future advance seems to lie in obtaining practical methods of "auto-injection" by which lymph vessels may be naturally injected by the vital activity of the organs in which these vessels begin. The evolution of the lymph system is traced in Chapter III.; it appears first in the lowest class of vertebrates—the fishes. In Chapters IV. and V. the development of the lymph system in the embryo and its finer structure in the adult are described. The remaining chapters are devoted to a description of the lymphatics of special parts and organs of the body.

It is plain that a work which contains references to 844 published papers and monographs cannot be summarised in a short notice. In spite of its apparently elaborate nature the practical surgeon will readily find in Dr. Bartels's work such details of the lymphatic system as he may stand in need of. Indeed, the author has kept the surgeon's point of view steadily before him. Although this work is issued as the seventeenth part of Bardeleben's elaborate "Text-book of Anatomy," it may be obtained separately at a price which seems quite reasonable.

The Optic Nerve and the Accessory Sinuses of the Nose. By Professor A. ÓNODI, University of Budapest. Authorised translation by J. LUCKHOFF, M.D. Edin. With 50 illustrations. London: Baillière, Tindall, and Cox. 1910. Pp. 101. Price 10*s.* 6*d.*

ENGLISH rhinologists have now at their disposal an improved edition of Professor Ónodi's well-known treatise on the anatomical and clinical relationship of the optic nerve to the air sinuses of the nose. The author has availed himself of the opportunity provided by the issue of an English edition to add 23 illustrations and many recent observations which have been made since the original work appeared in 1906. Indeed, the illustrations constitute a feature of the work; they represent clearly and truthfully that complicated part of the base of the skull in which the optic nerve is situated. So minutely has Professor Ónodi studied the variable degrees of development and of relationship of the sphenoidal and ethmoidal cells to the canal for the optic nerve that it is difficult to draw a clear picture of what may be regarded as the normal or more common form. So variable is the relative development of the air sinuses which border on the optic canal that he finds it necessary to distinguish 38 varieties, which are assigned to 12 groups or types.

This work is rightly described as "A Contrit ution to the Study of Canalicular Neuritis and Atrophy of the Optic Nerve of Nasal Origin." The first part of the book (68 pages) is devoted to the anatomy of the sinuses; the second part (33 pages) contains a summary of the numerous observations on the routes by which infective processes may and do spread from the air sinuses to neighbouring nerve structures, especially to the optic nerve. In this connexion the author lays especial stress on the venous routes and on the importance of studying the connexion between the veins of the air sinuses and those of the orbit and optic nerve. It is unnecessary to add that Professor Ónodi's work is a most reliable and important contribution to rhinology.

Remedial Gymnastics for Heart Affections used at Bad-Nauheim. Being a translation of "Die Gymnastik der Herzleiderden" by Dr. JULIUS HOFMANN and Dr. LUDWIG POHLMAN, Berlin und Bad-Nauheim. By JOHN GEORGE GARSON, M.D. Edin., Physician to the Sanatoria and Bad-Nauheim, Eversley, Hants. With 51 full-page illustrations and diagrams. London: Swan Sonnenschein and Co. 1909. Pp. 128. Price 5*s.* net.

THE use of muscular exercises as a means of treatment in certain cases of cardiac disease is now well established, and is very extensively employed, especially in Germany, more particularly at Bad-Nauheim. While the general character of these exercises, especially of the so-called resistance exercises, is known to most medical practitioners, it is probable that many would find it difficult to supply a carefully graduated series of exercises to a patient, since the descriptions given in text-books of medicine are frequently meagre. A want of this kind the book before us is admirably calculated to supply. The exercises are described clearly and without unnecessary verbiage. Each exercise is illustrated by one or more clear photographic reproductions. The advantage of these exercises is that no apparatus is required, with one exception—an exercise for strengthening the abdominal muscles for which a simple mechanical contrivance is used. This exercise, which consists in trunk-bending, is, moreover, one

which would only be used by a patient who could do all the other exercises without much exertion.

The general principles of treatment by baths and exercises are briefly but lucidly set forth, and clear rules are given in regard to the indications for and against their use. The importance of medical supervision is urged, in order to ensure that the exercises are graduated to the patient's capacity. The methods employed for controlling and observing the effects of exercises upon the patient are also discussed, including the observation of variations in the rate, rhythm, and quality of the pulse, the investigation of the blood pressure, and the study of the size of the heart both by percussion and by means of the orthodiagraph. A further method which the authors describe is to study the effect by testing if fatigue is produced by means of Sommer's analysis. For this purpose an ingenious apparatus is employed whereby any trembling movements in a limb are graphically registered after being split up into their component phases.

The authors are not intemperate in their claims for the value of exercises, and they are careful to give the necessary warnings in regard to the need for care, gentleness, and skilled supervision. The translator has rendered the text into readable English, and the book should prove useful to medical practitioners recommending exercises and Nauheim baths to their patients.

LIBRARY TABLE.

Nervousness. By A. T. SCHOFIELD, M.D. Brux., M.R.C.S. Eng. 1910. Pp. 88. Price 1*s.* net. *Nature's Help to Happiness.* By JOHN WARREN ACHORN, M.D. Pp. 55. Price 1*s* net. (Rider's Mind and Body Handbooks.) London: William Rider and Sons, Limited.—These are two of the flood of little and big books which are being outpoured to-day dealing with what may shortly be called "worry." Worry, of course, is no new foe to humanity, but possibly it is more insistent and incisive in these latter days than it was to our ancestors. For to-day the world is much smaller than it was, and not only do our own troubles worry us but those of the world in general, for the news of any event, whether of real importance or no, is common property within a few hours after it has happened. In old days, to escape from the turmoil and wickedness of the civilised world, men retired into the desert, meaning an uninhabited region where they could obtain the means of livelihood in response to some amount of labour. But to-day such a place hardly exists, and most of us are ground in the mill of having to earn our daily bread in the whirl of a great city with all the additional machinery of politics, both Imperial and local. We cannot get away from them—education, housing, the problems of drink and poverty affect us whether we will or no. Small wonder, then, that our nervous systems are working at high pressure and that sometimes the machine breaks down. The two books before us enter into these matters and to a certain extent show how worry may be met. Dr. Schofield gives a short account of neurasthenia and neuromimesis, and points out the value of suggestion, not hypnotism necessarily, but kindly, thoughtful advice given by the medical man and carried out by the patient. Naturally food, exercise, habits of life, and other adventitious aids are not neglected. Dr. Achorn, who from internal evidence appears to be an American, gives the subtitle to his book of "Ground Treatment." His cure for worry is to go out into the country, to work there, and to sleep on the ground. No doubt this is good advice, but the difficulty for most sufferers, in this country at any rate, is to find the ways and means for putting it in practice. Still, we are glad to see from these books, and many others like them, that nervousness and worry are beginning to be recognised as real diseases, even though not exhibiting a definite causal agent, and it is also well that the fact should be recognised that a patient can do a great deal for himself when in such a condition, if his actions, both mental and bodily, are controlled by a medical man who has studied "functional" nervous troubles.

La Nuova Scienza Medica, ossia La Sifilide Ereditaria ed Acquisita in Rapporto alle Malattie del Corpo Umano. Studi ed Osservazioni ad Uso dei Medici Practi. Per il PASQUALE FUSCO. Vol. I. Tipografia: "La Speranza." 1909. Pp. 456.—It is difficult to explain in a few words the contents of this work, but we may say that it consists practically of an energetic attack on most accepted medical opinion. Dr. Fusco starts with the idea that syphilis is the main, if not the only, cause of almost all the diseases of the human body. In some cases the action of syphilis is direct, in others it acts indirectly, producing conditions which Fournier has called "parasyphilitic." He agrees that, on the whole, the syphilitic infection is hereditary, though the acquired disease has a similar effect. He claims that spontaneous cow-pox and the "grease" of horses are the results of syphilitic inoculation from the hands of those who have to deal with these animals. He further urges that all the germs which have been described as existing in diverse diseases are merely the effect, and in no wise the cause, of the maladies with which they are connected. We have not space to follow the author through all the subjects dealt with in this book, but we may mention that he claims to find the support for his theories in the cure of many cases of early phthisis by means of antisyphilitic remedies, especially with mercury, for he holds strongly that tuberculosis is nothing more than the last stage of syphilis. This is merely the first volume of the work, and we cannot but feel that the author is terribly in earnest in all that he writes; he feels acutely the lack of attention which his ideas receive at the hands of his colleagues, and he urges that attention should be paid to the vast importance of syphilis as the real starting-point of many diseases. An attack on cherished beliefs may always do good by causing us to examine more carefully the grounds for the faith that is in us. Again, the wide spread of syphilis does produce a very harmful effect on the race. But we cannot support Dr. Fusco's views.

The Diagnostics of Internal Medicine. By GLENTWORTH REEVE BUTLER, M.D., Sc.D., LL.D., Physician-in-Chief, Methodist Episcopal Hospital; Attending Physician to the Brooklyn Hospital. Third revised edition. London and New York: D. Appleton and Co. 1909. Pp. 1193. Price 15*s.*—This book has been written from the point of view of practical clinical work. It is divided into two parts. The first deals with evidences of disease and comprises (1) a brief consideration of the clinical anatomy and physiology of certain organs and systems—namely, the points which are practical and of everyday utility; (2) a description of the approved and recognised methods of examination; (3) a careful consideration of the many signs and symptoms encountered in the practice of "internal medicine"; and (4) a statement of the diagnostic significance of each sign and symptom—that is to say, the diseases are given, the presence of which is more or less strongly suggested by the finding of a given sign or symptom. The second part is concerned with diagnosis, direct and differential. It contains (1) succinct descriptions of recognised diseases and their symptoms, with (2) special reference to differential diagnosis of each disease. The methods of examining the various organs are plainly and fully described, and the work should prove a valuable guide to the student engaged in the wards or out-patient departments. It would specially help him to acquire habits of thoroughness and method in his clinical work, which might

aid him throughout the whole of his professional career. Each section has been made as complete as possible. For instance, in the section describing the examination of the lungs and pleura the topographical anatomy is first explained. Then follows a brief consideration of the physiology of the lungs. Inspection and palpation of the chest with reference to the lungs are then discussed, followed by remarks on percussion, the methods employed, the normal sounds, and the changes produced by disease of the lungs or pleura or of neighbouring organs. Auscultation and the voice sounds are described on similar lines. By considering each system of the body in this way a comprehensive grasp of physical examination and the deductions to be made therefrom can be obtained. The present edition, the third, has been brought thoroughly up to date. The value of the book is increased by five coloured plates and 272 illustrations and charts in the text.

JOURNALS AND MAGAZINES.

The Quarterly Journal of Medicine. Edited by WILLIAM OSLER, J. ROSE BRADFORD, A. E. GARROD, R. HUTCHISON, H. D. ROLLESTON, and W. HALE WHITE. Vol. III., No. 11. April, 1910. Oxford: At the Clarendon Press. Subscription price, 25*s.* per annum; single number, 8*s.* 6*d.* net each.—The contents of this number are: 1. The Question of the Side Affected in Hemiplegia and in Arterial Lesions of the Brain, by Ernest Jones. As a result of a study of the side affected in 5281 cases of cerebral hæmorrhage, thrombosis, and embolism and of hysterical hemiplegia, in 3539 of which the nature of the lesion was determined by post-mortem examination, no evidence was found that with any of these conditions either the lesion or the hemiplegia was more liable to affect one side rather than the other. Any diagnostic significance attributed to the side affected in these conditions is therefore unwarranted. 2. On Acute Pyelitis due to Bacillus Coli as it Occurs in Infancy, by John Thomson, with Pathological Reports on two cases of Pyelonephritis by Stuart McDonald. The clinical features of infections of the urinary tract as seen in infants under the age of two years are described on the basis of a study of 25 cases. In the treatment of these cases two main indications are described—viz., to ensure a copious discharge of urine and to render the urine alkaline and to keep it so for a time. This is done by means of citrate of potassium. 3. So-called Bigeminy of the Heart, by Thomas Lewis. 4. Complete Heart Block and Auricular Fibrillation, by Thomas Lewis and E. Garvin Mack. Both of these papers are concerned with the investigation of conditions of abnormal cardiac rhythm, and are accompanied by tracings and galvanometer records. 5. On the Presence of Hæmagglutinins, Hæmopsonins, and Hæmolysins in the Blood obtained from Infectious and Non-infectious Diseases in Man, by Leonard S. Dudgeon and H. A. F. Wilson. This note forms an abstract of three papers communicated to the Royal Society detailing the results of allowing normal and immune human serum to act in the presence of normal and immune blood cells. 6. Some Remarks on the Work of Andrew Connal, "A Study of Cerebrospinal Fluid in Meningitis," by R. v. Jaksch of Prague. This is a note upon a paper published in a former number of the *Quarterly Journal of Medicine*. 7. A Ventricular Venous Pulse of Regular Rhythm, by E. E. Laslett. 8. On Chylous and Pseudochylous Ascites, by R. L. Mackenzie Wallis and H. A. Schölberg. An exhaustive analysis was made of the pseudochylous fluid removed by paracentesis from a case of chronic nephritis. The authors conclude that the milky appearance was due to a lecithin-globulin complex held in suspension by the inorganic salts present, and that it was not attributable to free lecithin, fat, or to a mucinoid substance. 9. The Myopathies or Muscular Dystrophies, a Critical Review, by F. E. Batten. A classification of these peculiar conditions is outlined and the relationship of myatonia congenita to them is discussed. It is regarded, both on clinical and pathological grounds, as a true myopathy. The pathology of these conditions is reviewed and it is suggested that although for clinical purposes it is convenient to recognise types, they must be regarded as a whole, since there are no hard-and-fast lines between the different types.

New Inventions.

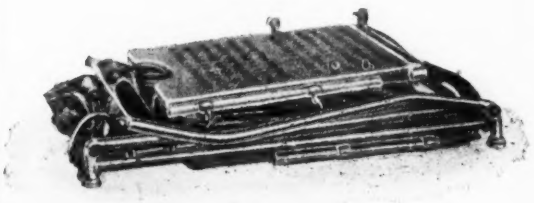
A NEW OPERATING TABLE.

Mr. A. Roubinowitch has submitted for our inspection a new operating table called "L'Unique," combining in a single table the requirements of surgical operations and medical examinations. This table is built entirely of metal and is nickel-plated throughout; it consists of a supporting framework of three pieces jointed at the ends so as to allow of being folded for transport; two moveable arms pass from the frame connected by crossbars imparting the necessary stability. The upper surface of the table is made by three plates and these can be folded on to one another. A head-rest is provided which can be moved in any direction desired by the operator. There are not any delicate or intricate parts to

FIG. 1.

get out of order and the arrangement of the table upon fixed pivots renders the working quite easy and simple. The table is perfectly rigid when set up for use (Fig. 1) and is a thoroughly practical production, having the further advantage that all parts are made interchangeable, so that any one

FIG. 2.



part missing or broken can be replaced without difficulty or delay. The weight of the whole apparatus is only about 60 pounds and it folds up into such a small compass (Fig. 2) that its transport is a matter of great facility. We think that this table may be of great use to many of our readers. The address of the agent in London is Mr. F. A. Mori, 272, Salisbury House, London Wall, E.C.

ROYAL NAVY MEDICAL SERVICE.

A NEW set of regulations for the entry of candidates for commissions in the Medical Department of the Royal Navy have been issued by the Admiralty. The text of the regulations is as follows:—

REGULATIONS FOR THE ENTRY OF CANDIDATES FOR COMMISSIONS IN THE MEDICAL DEPARTMENT OF THE ROYAL NAVY.

ADMIRALTY, January, 1910.

1. Every candidate for admission into the Medical Department of the Royal Navy must be not under 21 nor over 28 years of age on the day of the commencement of the competitive examination. He must produce an extract from the register of the date of his birth; or, in default, a declaration made before a magistrate, from one of his parents or other near relative, stating the date of birth.

2. He must declare—1. His age and date and place of birth. 2. That he is of pure European descent[1] and the son either of natural-born British subjects, or of parents naturalised in the United Kingdom. 3. That he labours under no mental or constitutional disease or weakness, nor any other imperfection or disability which may interfere with the most efficient discharge of the duties of a medical officer in any climate. 4. That he is ready to engage for general service at home or abroad, as required. 5. Whether he holds, or has held, any commission or appointment in the public services. 6. That he is registered under the Medical Act, giving the date of his registration as a medical student, or of his beginning professional study. 7. Whether he has previously been examined for entry in the Naval Service and, if so, when.

3. The certificates of registration and birth must accompany the declaration, which is to be filled up and returned as soon as possible, to permit of reference to the candidate's medical school.

4. The dean or other responsible authority of such school will be requested by the Medical Director-General to render a confidential report as to the candidate's character, conduct, professional ability and fitness to hold a commission in the Royal Navy.

5. The candidate will then be interviewed by the Medical Director-General, and his physical fitness will be determined by a Board of Naval Medical Officers. The Medical Director-General will then decide whether he may be allowed to compete.

6. If accepted, he will be eligible to present himself at the entrance examination which will be held twice a year.

7. Candidates will be examined by the examining board in the following subjects:—

(*a*) Medicine, including medical pathology and therapeutics.
(*b*) Surgery, including surgical pathology and clinical surgery.

The examination will be partly written and partly practical, marks being allotted under the following scheme:—

Medicine.		*Surgery.*	
Paper	400	Paper	400
Clinical	400	Clinical	400
Oral	400	Oral	400
Total	1200	Total	1200

8. The appointments announced for competition will be filled from the list of qualified candidates arranged in order of merit; but should it at any time be considered expedient to grant commissions beyond those periodically competed for, the Admiralty have power to admit annually not more than six candidates, according to requirements, specially recommended by the governing bodies of such colonial universities as may be selected and whose qualifications are recognised by the General Medical Council.

Candidates so proposed are to be approved by the Director-General of the Medical Department of the Navy.

They will have to pass a physical examination before a board of naval medical officers in the colony, and will be required to register their qualifications on arrival in England. They will be allowed, if they wish it, to compete at the next examination for entrance and take their position according to the order of merit; should they decide not to compete, they will be placed at the bottom of the list.

A fee of £1 will have to be paid by each candidate to entitle him to take part in the competition.

9. Candidates who have served in the Officers' Training Corps, and who are in possession of the certificates laid down in the regulations of that corps, will be credited at the entrance examination with additional marks as follows: Candidates in possession of Certificate A will receive 1 per cent. and those who possess Certificate A and B 2 per cent. of the maximum number of marks allotted.

A candidate will not be allowed to compete at more than two examinations.

10. A candidate successful at the entrance examination will be appointed as Acting Surgeon in the Royal Navy and will be required to pass through such courses of instruction as the Admiralty may decide. At the end of the courses the Acting Surgeon will be examined and, after he has passed, will be given a commission as Surgeon in the Royal Navy. The commission will date from the day of passing the entrance examination. The number of marks gained at this examination, together with those gained at the entrance examination, will decide a candidate's place on the list for seniority. An Acting Surgeon who fails to qualify in the above examination will be allowed a second trial at the next examination, the period between the two examinations not being counted as service for either promotion, withdrawal with gratuity, or retirement after 20 years' service, and should he qualify, he will be placed at the bottom of his list; should he again fail, his appointment will not be confirmed, and he will be required to withdraw.

11. A gold medal, a silver medal, and three Navy Regulation pocket cases will be awarded as prizes in connexion with these examinations; and the gold medallist will have a distinguishing mark after his name in the Navy List.

12. Surgeons on entry are required to provide themselves with a regulation pocket case of instruments.

13. Every medical officer will be required to undergo a post-graduate course of three months' duration at a metropolitan hospital once in every eight years (should the exigencies of the Service permit), and this as far as possible, during his surgeon's, staff surgeon's, or fleet surgeon's period of service. While carrying out this course the medical officer will be borne on ship's books for full pay and will reside at the Royal Naval College, Greenwich. The repayment of travelling expenses to and from his home or port will be governed by the King's Regulations; the fees for each course (not exceeding £25) will be paid by the Admiralty on the production of vouchers at the end of the course. The medical officer will be required to produce separate certificates of efficient attendance in the following:—

I. The medical and surgical practice of the hospital, including instruction in anæsthetics;
II. A course of operative surgery on the dead body;
III. A course of bacteriology;
IV. A course of ophthalmic surgery, particular attention being paid to the diagnosis of errors of refraction;
V. A practical course of skiagraphy.

14. Extracts from the Regulations with regard to pay, promotion, and retirement of medical officers are given in the appendix.[2]

15. The special attention of candidates is directed to the following rules under which officers are allowed to withdraw from the Service after four years' full pay service in the Royal Navy, with the advantage of joining the Reserve of Naval Medical Officers:—After four years' service in the Royal Navy an officer, if he wishes, may pass from Active Service to the Reserve of Naval Medical Officers, when he will reap the following advantages:—(i.) He will be granted a gratuity of £500 on passing into the Reserve. (ii.) His name will be retained in the Navy List; he will retain his Naval rank and be entitled to wear his Naval uniform under the Regulations applying to officers on the Retired and Reserved Lists of His Majesty's Navy. (iii.) If he agree to remain in the Reserve for four years, he will receive a retaining fee of £25 per annum. If, at the expiration of this period, he agree to remain in the Reserve for a further period of four years, he will continue to receive the same retaining fee.

Should an officer prefer it, however, he may simply enter the Reserve for a period not exceeding eight years, with power to give six months' notice of his intention to resign his position at any time (in which case he will receive no retaining fee). He may also adopt this method of Reserve Service after the expiration of four years served under the conditions referred to in (iii.), by renouncing his retaining fee for his last four years' service in the Reserve.

No officer will be allowed to remain in the Reserve for a longer period than eight years.

Officers of the Reserve will be liable to serve in the Royal Navy in time of war or emergency. When called up for such service they will receive the rate of pay, viz., 17*s.* a day and allowances, to which they would have been entitled after four years' service on the Active List.

By Command of their Lordships,
C. J. THOMAS.

These regulations, it will be noted, show certain points of difference from the former regulations which appeared in the last Students' Number of THE LANCET (August 28th, 1909). Confidential reports as to the character of a candidate are now to be obtained from the dean of his medical school. Voluntary subjects in the entrance examination are done away with, and the examination is to deal with medicine and surgery only. In each subject there is to be a written, a clinical, and an oral examination, and 400 marks are given for every one of the six examinations. The subject of hygiene is apparently omitted altogether. Certain additional marks are given to candidates who possess certificates from the Officers' Training Corps. Nominated candidates, except those nominated by colonial universities, are no longer allowed.

The most important alteration, however, is that successful candidates in the entrance examination are no longer given commissions as Surgeons, but only as Acting Surgeons. They have to go through a course or courses at Haslar, and at the end of the courses have to pass an examination for Surgeon. The result of the new regulations will probably be that men will be kept more up to the mark than formerly, and that greater attention will be paid to the courses on tropical diseases and naval hygiene.

Clause 13, which refers to post-graduate courses for officers on service, lays down that during the course the officer shall reside at the Royal Naval College, Greenwich, while the course is taken at a metropolitan hospital. Formerly the officer was granted lodging money and could apparently live where he liked. Under the new regulation a married officer will have to keep up, unnecessarily so far as duty is concerned, two establishments—a room at Greenwich as well as lodgings outside. He will probably, too, have to join the mess, and altogether will possibly be £2 a week worse off than at present, £25 on the three months, which will make it very difficult for some officers to take the course at all. This is a fresh evidence of the little power at the Admiralty wielded by the Medical Director-General, for whom executive authority is much to be desired, that he may protect the interests of medical officers whom he has some difficulty in obtaining.

[1] If any doubt should arise on this question the burden of clear proof that he is qualified will rest upon the candidate himself.

[2] The exigencies of space prevent us from publishing this appendix.

THE LANCET.

LONDON: SATURDAY, MAY 14, 1910.

The Death of the King.

IT is still hard to believe that KING EDWARD VII. is dead. The blow has fallen upon his country and upon its vast dependencies with such suddenness that it has been, and is, difficult to realise its full import. The newspapers almost to the day of his death had recorded the incidents usual to his busy life. He had visited the Royal Academy a week only before the fact of his illness was first known to the public, and since been seen at the opera and the theatre, apparently maintaining the improvement in his health which was obvious on his return from abroad. He went down to his country home and on return from it transacted a large amount of State business, and received in audience many important persons. He now lies dead in the Palace where he was born not quite 69 years ago, having fallen a victim to a sequence of events all too common under our rigorous skies and among men of his age when duty compels them to lead over-full and over-arduous lives. There has passed from us a great King.

The full measure of his greatness future generations will judge more accurately than we are able to do, but all are realising that the Sovereign whom they have lost was more than a ruler popular with his subjects on account of a genial bearing and a tactful grace exhibited in public, or on account of an able and regular discharge of the conventional functions of royalty. A year after his succession to the throne, as none of us need be reminded, KING EDWARD underwent an operation on the day preceding that fixed for his Coronation. The news of this occurrence came with sensational suddenness, arresting preparations for universal rejoicing which were almost completed, and the whole nation was conscious that it might be called upon to endure the tragic loss of its Sovereign at the very moment fixed for his formal elevation to the throne of his ancestors. Bitterly we should have mourned that loss, but we should never have known its extent, for the finer qualities of statesmanship evinced by KING EDWARD have been shown since his succession to the Crown, when the opportunity to display his capacities was furnished. As PRINCE OF WALES he was conspicuous for his untiring industry in the performance of the duties which QUEEN VICTORIA was able to delegate to him; and he was deservedly popular as a man of wide sympathies and as a prince who entered keenly into the enjoyment of those sports which are dear to the majority of his subjects, and his friends were many. As a King he soon made it apparent that while at home he could occupy the place of a constitutional monarch with kingly dignity, he could exercise an influence in the world at large worthy of his position as the sovereign ruler of a great empire. In a country jealous of its constitution and of the authority of its Parliament, and in which the Government of one year may become the Opposition of the next, KING EDWARD was able so to keep his actions free from the suspicion of party bias that he won and retained the unshaken loyalty and respect of the three estates of the realm and of every section of his subjects throughout his vast dominions. In the dealings of his kingdom with other countries he was able to take a part for which he was singularly fitted by nature and by training. Both had combined to endow him with the knowledge of affairs, the tact, and the advantages of manner and bearing which form the equipment of the ideal diplomatist. He was a King whose influence was not only recognised in the royal circles of Europe, but was felt throughout the nations among which it was his ambition to preserve peace. Of the sincerity of his desire to avert the horrors of war there was never any doubt, nor of the sagacity with which he selected and employed the right means for doing so. The general recognition of what he achieved in this direction has been a conspicuous feature in the popular demonstrations of loyal regret at his decease. In a time of political unrest attendant upon a serious constitutional crisis KING EDWARD has passed away, and there has been heard only the voice of universal sorrow at the death of a loved ruler, combined with tributes of unqualified admiration to the memory of a wise and prudent King. In the midst of party rivalry and contention distinguished by an acrimony unusual during recent years in these islands there has been unanimity in this, and we may quote as illustrating the feeling of all the words of a well-known leader of the Labour Party who, in a speech made while the KING lay dying, said of him: "I feel and I know from the bottom of my heart that he is the greatest statesman the world possesses at this moment."[1]

To the profession of medicine KING EDWARD was a staunch and helpful friend. Twice during his life he had come very near to death, once as PRINCE OF WALES and again on the very eve of his Coronation. On the one occasion, and on the other, so far as such skill could avail, medical and surgical skill saved his life, but to our thinking the view which attributes KING EDWARD'S enlightened interest in medicine to

[1] Mr. Will Crooks at the Browning Settlement, Walworth-road, May 6th.

a sense of personal gratitude is too limited. He was notably a man of warm sympathies whose actions were ever prompted by the desire to aid the people in a practical manner, and in accordance with experience of their needs. In a brief biographical sketch we have enumerated many occasions on which he publicly showed his appreciation of medicine and his certainty that in its scientific practice lay the solution of many of the social problems of the day. As the outcome of such views King Edward's Hospital Fund will remain an enduring monument of his kindliness of heart, of his practical and business-like capacity to promote the success of that which he initiated, and of his insight into the hard facts of the lives of his humblest subjects. He was desirous to provide for those, beyond whose reach they must otherwise remain, the benefits of medical and surgical aid and of nursing, applied in circumstances favourable to success exactly as their wealthier neighbours could command them. Moreover, King Edward's Hospital Fund is a recent institution for the general assistance of the hospitals of the metropolis. Of the full extent of the late monarch's help to individual hospitals throughout the kingdom those connected with them are best aware. Throughout his career as PRINCE OF WALES, as well as during the comparatively few years of his reign, he was ever ready to lend that help which his position and influence rendered of such inestimable value, and the constant association with him in his good work of his Royal Consort, and his son, now our King, will not be forgotten. Beyond this he was conspicuously eager to acquire a comprehensive knowledge of all that was being achieved by science in the way of fresh discovery, to appreciate its utility, to promote its application, and to honour those to whose efforts it was due. The men of science in his kingdom were no mere names to him; he honoured them with his personal acquaintance, and distinguished some with his friendship, while he was careful also that their achievements should not go without those tokens of royal appreciation which their fellow-subjects would readily recognise. In the institution of the new orders associated with his reign of peace we find honours and decorations devised for the reward of those who in the exercise of peaceful pursuits, in literature, in science, in acts of charity, in the display of the virtues of citizenship, have deserved esteem by working for the good of their fellow men. Among the rewards thus distributed a fair share has fallen to members of the medical profession, and has helped to raise it to that position which it now holds in the eyes of the nation.

In reckoning that which the King who has passed from us achieved we must not forget the tireless energy which enabled him to perform the duties of his station as a prince and as a monarch while enjoying to the full the pleasures of life which that station placed within his grasp. He may be said to have lived in a stimulating age, and to have occupied with honour a position which enabled him to watch and to assist in no small degree the progress taking place around him. During the reign of QUEEN VICTORIA he saw many great changes brought about in the social and sanitary condition of the people, in promoting the public health, in housing the poor, in the cheapening of their food, in protecting them against injury in mines and in factories, and in the promotion of their general welfare. Of all these and kindred developments he was a sympathetic spectator; in some he took an active part, and he was ever ready to show appreciation and bestow recognition upon the work of others. At the same time, he filled the rôle of the leader of society in the kingdom, so that when he succeeded to the throne his popularity as a prince commended him to a large body of his subjects who then scarcely appreciated his higher qualities. In the encomiums passed upon him during the past few days he has been praised as a "popular" monarch. He deserved the title. In a nation priding itself upon the exercise of manly qualities he was conspicuous as a man, combining royal dignity with a genial courtesy to those brought into contact with him, enjoying pursuits and sports dear to his countrymen, and in no way removed from them by the pride of his position or by any asceticism of nature or temperament. His place in history, however, will rest upon far more than popularity, as the word is generally used. He will be recognised by posterity as the embodiment of social diplomacy—the man who wanted the world to be happy and who had the insight to know how to take steps in that humane direction.

Crime and the Weather.

IN the scientific study of the criminal, which has been pursued with so much zeal and assiduity since the late Professor LOMBROSO brought it into vogue some 30 years ago, a great deal of attention has been devoted to investigating the relation of the various forms of anti-social conduct to meteorological conditions. The problem is, of course, by no means a novel one; it was discussed long before criminal anthropology was ever heard of, and its fundamental idea—that the mind is affected by atmospheric influences—dates back in all likelihood to the first stirrings of speculative thought. In less remote times and in more definite form it was a common subject of theorising ingenuity from the time when MONTESQUIEU formulated his brilliant, if occasionally fantastic, generalisations on the effect of climate on national manners and customs; and, in fact, the germs of many of the modern

views on this, as on other sociological questions, may be readily discovered by the curious inquirer in the neglected pages of the "Esprit des Lois." It was not, however, until much later - not, indeed, until the beginning of the statistical era, almost in our day—that the matter came to be susceptible of exact investigation, and that it was possible on the basis of adequate numerical evidence to establish the relation of seasonal and climatic changes to the movement of crime, and by comparing the variations in this movement in years differing in their meteorological character to gain some insight into the nature and significance of the relation of the two phenomena.

For the purposes of such an inquiry it is obvious that a special degree of interest attaches to those years in which the weather conditions, either in themselves or in their relation to other causal factors, show any decided difference from the average. Since the revision of the judicial statistics by Sir EDWARD TROUP in 1892—a reform, as we may remark in passing, which has given us the best criminal statistics in Europe—there have been several such years, and amongst them we may include as a particularly instructive instance the year 1908, for which the official returns relating to crime and criminal proceedings have just been published. Before discussing the figures given in these returns and considering them in relation to the meteorological character of the year, we may recall the fact that crimes of an impulsive type—and it is, of course, only such crimes that come into an inquiry of this sort—are specially frequent in the summer months; this is true of homicidal offences, of crimes of lust, and of attempts to commit suicide, and it is also true, of course, of actual suicide. While the fact is not disputed, there is a good deal of diversity of opinion as to its explanation. Some criminologists, and notably those of the Italian school, ascribe the greater incidence of passionate crimes in summer to the direct influence of the heat on the nervous system producing a condition of excessive erethism, while other observers regard it as merely a result of the longer days and the outdoor occupations which offer more opportunities for committing such offences. On the whole, the latter explanation has hitherto been the more generally accepted, largely on account of DURCKHEIM'S able advocacy of its validity in the case of suicide. There is, however, some reason to think that it should not be adopted as an exclusive theory, and that in order to find a complete explanation of the facts it is necessary to admit a certain share of influence through the direct action of temperature on the nervous functions; and it is as confirming this opinion that the criminal statistics of 1908 are of special interest. The year in question, it should be mentioned, was not only remarkable as one in which the climatic conditions were peculiarly of the sort to justify the Englishman's traditional habit of grumbling about the weather: it was also memorable in economic history for a marked depression of trade and an unusual amount of unemployment. That fact interests us here, because "bad times" by minimising convivial drinking tend to decrease one of the chief influences which affect certain impulsive crimes, and more particularly crimes of lust. In 1908 the industrial depression was, in fact, accompanied by a remarkable fall in the amount of drunkenness, bringing the figures for that offence to a lower level than any recorded in the past ten years. We may take it, therefore, that during the year drunkenness was much less operative than usual in the forms of delinquency which we are considering, so that the effect of any meteorological influences should be to that extent more perceptible.

Turning now to the examination of these influences, we observe as of most importance from our point of view that the autumn months, especially October and November, were relatively warm, while the summer months were relatively cold. The warmth of the autumn months was particularly notable, the mean temperature during October exceeding the average by more than 4° F. As these unusual conditions would not be likely to modify very largely the ordinary course of industrial pursuits, we are probably justified in concluding that any marked deviation from the normal incidence of impulsive crime in the months in question cannot be accounted for in this way, but must be attributed at least in part to the direct influence of temperature. And in the summer and autumn of 1908 the departure from the ordinary seasonal curve of crime was manifest: the daily average of crimes against morals in October and November, instead of being as usual about half that in the summer months, was as 3·3 is to 4·5, while a similar comparison in the number of attempts to commit suicide gives a ratio of 7·0 to 8·3, and in crimes of violence the daily average for the two seasons is actually identical. These figures will seem more striking when it is borne in mind that the month of August, which had an exceptionally low record of impulsive crime, included five Saturdays and five Sundays, an excess of holiday leisure which would be likely to furnish special opportunity for drunkenness and for the sort of misconduct that goes with drunkenness. The view which the exceptional features of the seasonal distribution of crime in 1908 would suggest—viz., that offences of the impulsive class are directly influenced by variations of temperature—is confirmed by the statistics of other years in which the climatic conditions were of an unusual type. In 1895, for instance, there was a period of most exceptionally severe weather in the early part of the year, the temperature in the month of February being the lowest recorded for 50 years; and coincident with this cold weather there was a marked diminution in impulsive crime; sexual offences and suicides during February fell to nearly half, and attempts to commit suicide to less than half the ordinary winter average. And the statistics of other meteorologically abnormal years point in the same direction. Statistical evidence of the kind which we have been considering must, therefore, make us hesitate to accept the view of those sociologists who would have us believe that climatic and seasonal variations can only influence crime through the modifications which they produce in social and industrial activities. In this, as in other matters, the individual is not yet entirely swallowed up by the social man.

INVALID CHILDREN'S AID ASSOCIATION.—The Royal Family have again sent from Sandringham a gift of flowers to be distributed to the invalid children under the care of the Invalid Children's Aid Association.

Epsom College.

THE love of retrospection is inherent in the hearts of many persons, and this quality has prompted us, as it has prompted the editors of other old-established journals, to print habitually brief extracts from the back numbers. Our column entitled "Looking Back" is usually dated 78 years ago, which is a forcible testimony to our longevity, but which practically precludes anyone who is alive ever having seen the quoted article when it first appeared. This week we only look back 59 years, when we suggest that those of our readers who are interested in Epsom College should peruse the extract from a leading article of May 3rd, 1851, and should compare the opinion and hope expressed therein with the facts given in the prospectus of the College which we print in a prominent position in this week's issue. The comparison will serve to recall to mind ARISTOTLE'S aphorism: "There is a charm both in our recollections of the past and in our hopes for the future." It would be difficult to find a more hopeful augury for the position which Epsom College will take amongst the public schools of our country half a century hence than the conspicuous success which has attended the school since its real foundation 55 years ago. We stated in 1851 that the college, then only in the stage of a plan in preparation, ought to give to distinguished scholars the means of proceeding to the universities and there earn some of that fame and emolument which then almost seemed the prescriptive rights of the other professions. It will be observed, on reference to to-day's prospectus, that 19 scholarships, many of which are held at the Universities of Oxford or Cambridge, are now available at the school, four of the value of £60 a year, five of £50 a year, and the others ranging in value from £25 to £40 a year. We further expressed the opinion that with right opportunities the intellect of the youth of medical parents would win triumphs conferring lustre on the entire profession. That this forecast has been fulfilled will be granted when it is perceived that in the last 16 years no fewer than 30 open scholarships have been gained by Epsom boys at the Universities of Oxford and Cambridge, and in addition 124 boys have won higher certificates of the Oxford and Cambridge Schools Examination Board, 200 have passed the matriculation examination of the University of London, 65 have passed the whole of the preliminary scientific examination for the degree of M.B., B.S. of the University of London, 60 have passed a part of that examination, and 157 have gained certificates in the art examination.

Academic success has been accompanied by structural improvements. Within the last three years the Council has expended a sum of close upon £20,000 in extending the College buildings and in making numerous and much-needed improvements for the comfort of the masters, the boys, and the domestic staff. These extensions and improvements have not been restricted to any particular department, but in making them regard has been paid to the activities of a large public school in all directions. A large new building has been erected, which is known as the "Markham Skerritt Laboratories," containing physical and biological laboratories, lecture rooms, a workshop, a battery room, a day boys' common room, and four large and well-ventilated class rooms. The erection of this building has permitted an increase in size and accommodation of the chemical laboratory and theatre. Another new permanent large building is a gymnasium, which contains a fencing gallery and is fitted with all necessary up-to-date appliances, including those required for Swedish exercises. A music block has been erected containing sound-proof rooms for music practice and a suitable hall for concerts and classes. The Officers' Training Corps, which numbers at the present time 150 members, will appreciate the new armoury which has been provided, containing stands for 200 rifles, as well as the extension of the shooting range to the full regulation length. A large brick-built carpenter's shop, with a convenient timber store attached to it, has taken the place of the old iron structure in which good work was done for many years; and a building has been provided, containing a new box room, a changing room, and an extension of the lavatory accommodation. Most of these buildings are facing the College quadrangle, which the Council has very wisely had levelled and asphalted, and round which a handsome covered way has been erected, thus connecting the various new and previously existing buildings. The whole of the College has been heated by the "Reck" circulator system, and a hot water supply has been provided throughout the buildings, with the result, we understand, that there has been a marked freedom from colds generally. A few years ago a sum of about £8000 was expended in rearranging and modernising the sanitary arrangements at the College, and that the efforts of the Council to completely renovate the drainage were successful is proved by the expression of opinion by the Epsom urban authorities that the sanitary equipments and arrangements of the College now rank among the highest in this country.

We hope that any of our readers who have the opportunity will pay a visit to Epsom College. The school is not exclusively for the sons of medical men, but the medical foundation is an important part of the school's constitution. The advantage given to the sons of medical men of a reduction of 10 guineas in the annual fee does not, of course, make any great difference to the parental pocket in these days of profuse expenditure upon public school education, but the distinct success of Epsom boys when they enter the medical profession will appeal to those of our readers who intend to bring up sons to follow in their own footsteps. There is also the charitable side, and because we know how valuable this is we wish that many medical men would inspect Epsom College, and as an inevitable result become subscribers to the foundation. There can be no better object for endowment, nor one whose appeal is closer.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE NEW CHEMICAL LABORATORIES FUND.—The meeting at the Mansion House arranged for Tuesday, May 10th, in support of the fund for new chemical laboratories at University College, has been postponed on account of the death of His Majesty the King. It is anticipated that a meeting will be held later in the year, when a further announcement will be made as to the date.

Annotations.

"Ne quid nimis."

POPULATION AND VITAL STATISTICS.

MEDICAL officers of health are now, nine years since the last census, seriously handicapped by the impossibility of determining with any approach to accuracy the present population of their sanitary areas, more especially in urban districts. The increase of emigration since 1901 and the increased facilities for locomotion, due to the rapid development of suburban tramways since that date, have undoubtedly reduced the rate of increase of population within the arbitrary boundaries of administrative areas. Consequently the official estimates of the present population of very many of our largest towns, based on the hypothesis of continued increase at the rate that prevailed between 1891 and 1901, are without doubt considerably in excess of the true numbers, and thus both the birth-rates and death-rates in such towns are now understated. In the city of Birmingham, for instance, the medical officer of health, in his report dealing with the first quarter of this year, adopts the Registrar-General's estimate of the population of the city in the middle of this year—namely, 570,113 persons; he remarks, however, "that this figure almost certainly exceeds the actual population, probably to the extent of 40,000 persons." Notwithstanding this expression of opinion, the trustworthiness of which there seems to be very little reason to doubt, the medical officer proceeds to state that the birth-rate in the city during the quarter under notice was "the lowest for any quarter on record," and that the death-rate "was the lowest ever recorded in Birmingham during the first quarter of any year." It is, of course, obvious that if the population of the city is overstated by 40,000, the annual birth-rate during the quarter is thereby understated by about 2 per 1000, and the death-rate by more than 1 per 1000. In many of the 77 largest towns in England and Wales dealt with in the Registrar-General's returns the present population is probably even more seriously overstated than is suggested as being the case in Birmingham. Those who appreciate the value of trustworthy vital statistics as a stimulus to health progress, and their number increases rapidly, find it exceedingly difficult to exaggerate the importance of providing some remedy for the dangers of untrustworthy population figures. The only true and satisfactory remedy for this defect is a more frequent census enumeration of the population of the United Kingdom. Sanitary authorities and medical officers of health should utilise all the influence they can command to secure in the Census Bills, now awaiting the consideration of Parliament, authority for holding in 1916 a simple intermediate census of the number, sex, and age of the population of the United Kingdom. The present depreciation of our national vital statistics, due to the fact that our population is now only enumerated once in ten years, is unquestionably standing in the way of continued health progress.

THE MUSICAL FLEA.

AT a recent meeting of the Royal Society Dr. A. E. Shipley read, on behalf of Professor F. J. Cole, a paper upon Tone Perception in Gammarus Pulex. The paper pointed out that audition in the lower animals cannot be satisfactorily studied in most cases, since a stimulus produces no response that can be seen or measured. Gammarus, however, when confined in a microscope live box, responds in an energetic and striking manner by flexing its first pair of antennæ under its body. A response can be elicited after the second pair of antennæ have been removed, but not after the removal of the first pair. The instrument generally used to produce the stimulus was a tenor trombone, and the experiments were conducted either on the ordinary laboratory table or on a table specially constructed to filter off vibrations from the ground, and thus to ensure that the stimulus reached the animal through the air. It was found that Gammarus was most sensitive to the B-flat below middle C, and that its range of tonal sense was so limited that it might almost be adduced as an example of absolute or physiological tonality—i.e., of an animal specially sensitive to one note. Only a small percentage of individuals, however, responded at all, and then, probably owing to fatigue, the power of response soon disappeared. One specimen responded to every note of the trombone. The experiments may be interpreted as either tactual or auditory reactions, if it can be held that these two senses have segregated out in such a simple and true aquatic species as Gammarus pulex, and do not merely form a part of an indefinite common sensibility. Professor Cole's experiments are of great interest, and it may be remembered that Darwin, in his great book on "Earthworms," pointed out that these animals were quite insensible to the sound of a bassoon. Those of our readers who have passed middle age may remember seeing at fairs and such-like occasions an exhibition known as the "Industrious Fleas." One of the industries which these little animals undertook was nominally that of playing in an orchestra, and this was managed by the fleas being tied to small paper chairs which were placed in a ring on a musical box. When the musical box was wound up and set going the fleas waved their legs in a perturbed manner, but this was, we presume, mainly a tactual reaction owing to the vibration of the musical box being transmitted through the lid to the paper chairs, and so to the fleas' body.

PLANE TREES AND DISEASE.

IN the *Times* of May 7th there appears under the above title an interesting letter from Lord Walsingham, in which he directs the attention of the public in general, and of the medical profession in particular, to what he suggests may be a serious cause of disease, particularly of the respiratory organs. He believes that plane trees, which are for many reasons so popular in London and other towns, give off minute spicules, which are very irritating to mucous membranes; indeed, he states that "wherever plane trees are abundant, colds, coughs, inflamed eyelids, throat troubles, and general irritation of the mucous membrane are more prevalent than where such trees do not exist." Lord Walsingham's attention was first drawn to this matter as long ago as 1892, when he noticed the condition of the road dust in the avenue of planes to the west of Cannes, and attributed a serious attack of pneumonia following severe bronchial irritation in a member of his family to this cause. Microscopical examination of this dust showed that minute spicules, formed by the breaking up of the fruit balls of the plane trees, were plentifully admixed with it. A search of the literature was made at Lord Walsingham's request by Dr. Henry, Reader in Forestry at the University of Cambridge, and it was found that in "Trees of Great Britain" a statement is made that "plane trees are prohibited by law from being planted near or around schools in Alsace Lorraine," and that in the *Gardener's Chronicle*, iii., 378 (1888), it is shown that Galen and Dioscorides knew of the irritating properties of plane trees. Dr. Henry found on exposing, during April, glass slides smeared with glycerine at Kew and in Berkeley-square, that

numerous particles of broken fruit spicules adhered, and he states that "the fruit hairs are jointed (some are branched) and break up and float in the air; there must be myriads of these spicules in the air near plane trees." Lord Walsingham concludes his letter in the following words: "The case is so far proved; but it remains to be confirmed by the discovery of these spicules in the air passages of human patients, and to this end I would invite the careful attention of the medical profession." We must confess that the evidence adduced is far from convincing, although there is nothing inherently improbable in the suggestion, since, as is well known, the pollen of Anthoxanthum odoratum is an important factor in producing hay-fever and hay-asthma in susceptible persons, and also that Primula obconica causes marked cutaneous irritation in certain people. It should not be very difficult to get evidence in regard to the possible irritating properties of the plane tree, and Lord Walsingham's suggestion will no doubt be carefully considered. Meanwhile, we may express the hope that the character of these trees will be vindicated, for they grow well in London and are in other ways a welcome addition to our streets and parks.

CHRONIC PRIMARY INTUSSUSCEPTION IN THE ADULT.

To the *Boston Medical and Surgical Journal* of April 7th and 14th Dr. H. W. Goodall has contributed an exhaustive paper on chronic primary intussusception in the adult. It is not sufficiently recognised, as he points out, that this condition may exist for long periods, extending from many weeks to years. For the first time he has collected and analysed the recorded cases. Previous writers collected and analysed cases of chronic intussusception, but their series included children and cases secondary to ulceration, tuberculosis, or tumours of the intestine. The symptoms in children, however, differ from those in adults, and the symptoms in primary cases differ from those in secondary cases, in which they may be modified or obscured by those of the primary disease. Dr. Goodall has collected 122 cases of chronic primary intussusception in the adult, and he thinks that the condition is not so uncommon as might be supposed, for in the great majority its existence was unsuspected, and the diagnosis was made only at the time of operation or necropsy. Often some grave abdominal condition such as tuberculosis or cancer was diagnosed, and operation was therefore deemed inadvisable. As a rule, the symptoms are of sudden onset and pain is the most frequent symptom; it takes the form of attacks of colic, at the end of which the pain disappears as suddenly as it has appeared—a point of great diagnostic value. The disappearance of the pain seems to be due either to sudden relief of the congestion of the invaginated part or to disinvagination; therefore it is more often observed early in the disease before adhesions have formed. In some of the cases the attacks subsided gradually. Early in the disease there are always intervals of freedom from pain between the attacks, but later, with the formation of adhesions and other pathological changes, slight or moderate pains may be present in the intervals. As a rule the intervals are short, varying from a few hours to two, three, or more days, but during them nausea, digestive disturbance, and abdominal discomfort may be present. In a few cases the intervals were long, varying from two weeks to a year. Then the diagnosis of recurrent appendicitis was often made. The attacks are excited by the ingestion of food, purgatives, enemata, manipulation of the abdomen, and muscular effort. The pain as a rule is not definitely localised and may be relieved or intensified by pressure. After pain, vomiting is the most frequent symptom; it occurred in about half of the cases. The vomit is in no way characteristic. Fæcal vomiting has seldom been observed. Constipation existed in only 42 per cent. of the cases and diarrhœa in about the same number. The severity of the diarrhœa varied; from 3 to 40 loose motions a day are recorded. The stools have been variously described as watery, watery stained with fæces, bloody, bile-coloured, black, and typhoidal. An offensive odour was usually noted. In the more severe forms of diarrhœa dysentery was diagnosed. In seven cases the stools were normal throughout the disease, though the course differed in no way from that of the other cases. Blood in macroscopic quantity was present in the stools in 83 per cent. of the cases. Mucus was present in about the same percentage. Symptoms of exhaustion occur early and are progressive when the intervals of freedom from symptoms allow only partial recovery from the attacks. Emaciation usually occurs and may be extreme. A flat or retracted abdomen is the rule; in most of the cases a tumour can be found at some time during the course of the disease; it is described as concave, cylindrical, or sausage-shaped. Changes in its size, shape, and position are frequent and are a most valuable sign. They are due to increase or decrease in the extent of the invagination, varying œdema of the intestine, or accumulation of fæces above the obstruction. Of still greater importance is the appearance and disappearance (from disinvagination) of the tumour at different periods of the disease. A tumour was present in the rectum in 12 per cent. of the cases. The mortality of cases not operated on is high—77 per cent. Surgical treatment is therefore indicated. The injection of air or water to reduce the intussusception appears to be useless, as adhesions, ulceration, or gangrene are usually present. In 47 cases treated by operation the mortality was 36 per cent. In 22 resection was performed with a mortality of 18 per cent. In 8 cases the bowel was disinvaginated with a mortality of 25 per cent. In 17 cases a palliative operation was performed with a mortality of 64 per cent.

APRIL AT HOME AND ABROAD.

THE weather of last month was colder both at home and on the continent than that of the corresponding month of last year. In most localities the difference in the temperature was very appreciable; at Paris it was as much as 6°, and at Biarritz and the Scilly Isles 5°, while along the south coast of England the difference varied between 2° and 4°. Nice, owing to many mild nights, was an exception, its mean temperature being more than a degree higher. In this country the general character of the weather, although very variable, was scarcely ever warm for the time of year, and seldom very cold during the night-time. The temperature of the days was, however, far below the April average—a result due to the great amount of cloud and the frequent cold winds. The sunshine, while it was not generally very much below the average for the month, was extremely meagre compared with that of April of last year, which, it will be remembered, was the brightest April on record. In London the number of hours (109) was less than half that during April, 1909, and at Manchester the difference was even more marked. The quantity of rain exceeded the average over the kingdom generally and also at many places on the continent, and days with more or less rain were many at most of the resorts represented in the table. In the metropolis, however, the total fall only just equalled the normal, and was less than during the brilliant April of a year ago. As is almost invariably the case the April weather in southern Europe and the Mediterranean region was much warmer than in any part of this country; at Nice and Lisbon the mean temperature

was about 9° above that on the south and south-west coasts of England, and at Rome and Naples 10° above, while at Algiers the difference was no less than about 14°. At Algiers, as well as at Malta, the nights were as warm as the days in the south of this country. The coast of Italy had about the same warmth as is usually experienced during the early part of June over the southern and central counties of England. It will be noticed that at Biarritz the temperature was much lower than at the other southern resorts both during the day and night, and that the weather was very rainy, rain falling on no less than 18 days. In common with the south-western corner of France generally it was unusually subject to cold northerly and north-westerly winds which brought much cloud and rain. Several of its days were colder than in the south-west of England, and on many occasions the changes from cold to relative warmth and *vice versâ* as very rapid.

—	Highest temperature.	Lowest temperature.	Mean maximum temperature.	Mean minimum temperature.	Mean temperature for month.	Mean range of temperature.	Number of days with rain.	Total fall in month.
	°	°	°	°	°	°	*	ins.
Scilly	56	35	52	42	47·0	10	13	2·69
Jersey	59	32	53	42	47·7	11	5	0·72
Torquay	64	33	54	41	47·4	13	15	2·07
Weymouth	59	31	54	41	47·1	13	10	1·22
Bournemouth	64	29	54	40	47·0	14	13	2·07
Brighton	55	31	51	40	45·7	11	10	2·09
Bath	57	28	53	39	46·0	14	14	3·20
Buxton	55	23	48	35	41·4	13	16	4·78
Harrogate	59	25	51	36	43·2	15	16	2·72
Manchester	60	28	52	39	45·2	13	16	3·09
Nottingham	60	26	53	38	45·3	15	9	1·50
London (Westminster)	64	29	55	40	47·4	15	11	1·65
Paris	69	29	58	39	48·5	19	15	2·11
Berlin	73	30	58	38	48·1	20	8	1·19
Brussels	64	23	55	39	46·6	16	17	2·21
Nice Observatory ...	75	32	63	49	56·2	14	11	7·05
Biarritz	72	30	57	46	51·1	11	18	4·28
Florence	75	35	64	47	55·8	17	11	4·38
Rome	75	42	66	49	57·4	17	11	3·59
Naples	75	45	63	51	57·4	12	10	2·94
Palermo	81	41	68	49	58·4	19	10	1·69
Malta	72	47	64	54	59·3	10	5	0·95
Palma (Majorca) ...	77	36	64	49	56·9	15	7	1·90
Algiers	79	41	69	54	61·4	15	5	1·48
Lisbon	81	43	63	49	56·2	14	5	1·38

* Days with at least 0·04 inch.

ACETONURIA IN INFECTIOUS DISEASES.

IN another column we publish an article by Dr. Alfred Harris on the Occurrence of Acetonuria in Cases of Infectious Diseases. It has hitherto been considered that acetone appears in the urine in all fevers, and that it has therefore no great clinical importance.[1] Dr. Harris found, however, from an examination of the urines of patients in the isolation hospital at Southampton that, although this substance was present in most of the cases of scarlet fever and diphtheria which were admitted, as regards enteric fever it was found only in about a third of the cases. He further made the interesting observation that acetonuria occurred in many cases of diphtheria in which no rise of temperature had been noted; he therefore suggests that some other factor than simple pyrexia must have been concerned. He is also of opinion that the presence or absence of acetonuria has some clinical value as a symptom, since it was much more constantly present in diphtheria and scarlet fever than in cases of ordinary sore-throat, and thus its detection might be of assistance in differential diagnosis. Formerly it was believed that an abundance of nitrogenous food tended to its production, and some authors maintained that it arose from decomposition of proteids both of the body and of those taken as food. More recently, however, it has been shown that the essential factor in causing acetonuria is the absence of proper carbohydrate metabolism. Deprivation of food or the exclusion of carbohydrates from the food causes acetonuria without exception in the case of man. The fats also yield material necessary for the formation of acetone bodies. As Dr. Harris points out, if this explanation be correct, it seems strange that in a disease like enteric fever, when there is diminished absorption of food, acetonuria should only occasionally be met with, and then only at the beginning of the disease. These considerations are of interest and merit further investigation. Our knowledge of metabolism has greatly advanced during recent years, but many points still require elucidation.

[1] Von Jaksch: Clinical Diagnosis, 1909, p. 397.

THE LONDON COUNTY COUNCIL AND THE EARLY TREATMENT OF MENTAL DISEASE.

THE Asylums Committee of the London County Council has submitted to the Council itself the draft of a Bill to seek powers to establish and maintain a "receiving house for the early treatment of persons alleged to be insane." The committee at the same time recommended that the Council should not limit its application for powers to one receiving house, but should put itself in a position to provide whatever accommodation might be found necessary. The Finance Committee, in reporting upon the proposals of the Asylums Committee, pointed out that by them the Council would be committed to a new policy as regards the early treatment and certification of lunatics, a policy which would involve considerable expenditure of unknown amount. On general and financial grounds the Finance Committee opposed the recommendation of the Asylums Committee as to the larger scheme of receiving houses.[1] The subject has still, we believe, to be debated in the Council. We cannot regard the term "receiving house," used in this connexion, as a very happy one. The essential need in this particular matter is that there should be established as speedily as possible a mental hospital at which the earliest stages of mental disorder and the acute psychoses of short duration may be treated, and which may form an object lesson to the public in general, and to the presently constituted lunacy authorities in particular, that mental disorder may be investigated and treated as may any other class of ailment, and that it does not involve semi-disciplinary seclusion under lock and key under the direction of "keepers" of the nature of prison governors with a tinge of the medical man about them. It is a source of regret to us that the large general hospitals have not hitherto seen their way to devoting a ward or even a few beds here and there to this particular form of disease. We believe that there is no reason, from a medical point of view, why this should not have been done. So, too, it has always been a matter of some surprise to us why those hospitals especially devoted to the treatment and study of nervous disorder have not developed any sort of department reserved for the closely allied mental disorders; perhaps financial and administrative reasons have prevented this. There remain the

[1] THE LANCET, May 7th, 1910, p. 1291.

special wards of the infirmaries, and we think that these might be regarded as more than mere rest-houses on the way to asylums. They might be made suitable for the reception of the class of patients we have in mind and be placed under the consulting charge of practising psychiatrists. With another recommendation of the Asylums Committee, that every alleged lunatic should go in the first place to a receiving house, we do not altogether sympathise. There are many patients who come under observation too late for treatment at a mental hospital adapted for the class of patients we have above mentioned, and for whom the asylum is the proper place. It appears to us to be of little advantage that the journey to the asylum should be interrupted for a few days' purposeless sojourn at a receiving house, where the presence of such patients would involve arrangements wholly inappropriate to the atmosphere of the mental hospital.

THE DILUTION OF MILK WITH SPECIFICALLY CONTAMINATED WATER.

THE addition of water to milk is not such an exceptional occurrence as to call for special reference in these columns, but when the water which is added is not only grossly polluted but is found to actually contain the organisms of enteric fever the affair assumes a special importance. A case has recently come to light near Preston in which water to the extent of 3·6 per cent. had been added and in which the county analyst discovered the enteric fever organisms. The milk itself as drawn from the cow's udder was of excellent quality, but the water separately analysed yielded enteric fever bacilli. The bench quite rightly took a serious view of the offence and the defendants were mulcted in all to the extent of £44. A case such as this should turn the attention of local authorities and their officers to the enormous importance as regards health of securing a pure water-supply for dairies and cowsheds, but we are afraid that, especially in rural districts, this question does not receive the attention which it deserves. The position of the wells supplying many dairies in rural districts is often such as to actually cause pollution, and this although the dairies may have been registered with the local authority for many years. There can be no doubt that the standard of cleanliness of cowsheds in rural districts is far lower than it ought to be, and, although the milk cans are commonly washed with water which has been boiled, the utensils in which the cans are sometimes washed and those in which the milk is drawn are not infrequently used for other purposes. Water added to milk by way of dilution seldom undergoes any treatment whatever. In connexion with this important subject we are glad to see that a Milk and Dairies Bill [No. 123], providing for reforms with respect to the sale of milk and the regulation of dairies, is being introduced into the House of Commons. Whatever may be its fate it will have some educational value, and many of its provisions represent a distinct advance on the existing general conditions. Amongst other things the Bill provides for the compulsory registration of dairymen and a penalty not exceeding £5 for failure to register, and the local authorities are empowered to refuse registration as well as to remove from the list dairies already registered. Procedure with regard to the inspection of dairies and the prohibition of the supply of milk is simplified, and advances are made upon Section 4 of the Infectious Diseases (Prevention) Act, 1890, Section 71 of the Public Health (London) Act, 1891, and the Milk Clauses incorporated in many local Acts. With respect to tuberculous milk power is given to the local officers to require a cow to be milked in their presence, and the milk from any particular teat must, if so desired, be kept quite separate. A penalty is also imposed where the dairyman and those in his employ refuse to assist the officers in their investigations, a provision which in practice would prove decidedly useful. Similarly, as regards the sale of tuberculous milk or the use of such milk in the manufacture of products for human consumption, a fine of £10 is imposed unless proof is forthcoming that the milk has been boiled or otherwise sterilised. But this proviso as to sterilisation is obviously open to criticism. Greater facilities are afforded under the proposed legislation for procuring samples of milk, and power is conferred upon the Local Government Board by agreement with the Board of Agriculture and Fisheries to make any necessary orders as regards certain specified particulars, amongst which we note the prevention of impurities in milk, the cleanliness of milk vessels, the prohibition or regulation of preservatives, the identification of churns, and the prohibition or regulation of the mixing of the milk in one churn with the milk in another. The duty is also imposed upon the Local Government Board of making regulations under the Public Health (Regulations as to Food) Act, 1907, as regards the importation of milk or milk products; and the Board may, after holding a local inquiry, make orders compelling a council in default to do its duty as regards the milk-supply. Presumably the provisions of this Bill would have the effect of enabling the existing regulations under the Dairies, Cowsheds, and Milkshops Order to be replaced by something more modern and workable, and, if this alone were procured, a substantial step forward would be taken. In many instances the existing regulations are so vague and difficult to interpret that they possess very little practical utility from an administrative point of view.

MEASLES AND THE POST-OFFICE AUTHORITIES.

WE have received a copy of a report presented to the Brixham urban district council by Mr. George Blacker Elliott, the medical officer of health, concerning the action of the Post-Office authorities in regard to a case of measles occurring in the family of a postman. Briefly stated, the facts as reported by Mr. Elliott are that on April 15th the wife of a postman was taken ill with measles. On being informed of this next day, Mr. Elliott saw the postmaster and advised him to order the man off duty, so as to avoid the danger of infection. The postmaster stated that he had no power to do this, and accordingly Mr. Elliott telephoned to Torquay, where the head office for the district is situated. The officials there replied that they had no power to suspend the postman from duty, but promised to communicate with the authorities at the General Post Office. Three days afterwards the postman was ordered back to duty, and he has continued at his work from that time. Mr. Elliott has since learnt that the rule of the Post Office authorities is to the effect that no Post Office employee can be absent from duty on account of his coming from a household infected with measles. This is the more remarkable in view of the fact that there are stringent regulations barring employees from work if there is either scarlet fever or enteric fever in their homes. In commenting upon this case Mr. Elliott rightly maintains that it is not merely a matter of local interest, but one affecting the public health of the whole kingdom. Measles, as he points out, is by no means a trivial disease, when it is remembered that the deaths in England and Wales alone have varied during a period of 30 or 40 years from 6000 to 14,000 in a year. It is, moreover, one which is readily spread by fomites, and there is every reason to believe that letters, telegrams, or postage stamps may act as infective agents when handled by a person who has been attending on a patient suffering from the disease. Moreover, the

apparent indifference of the authorities towards this disease, when contrasted with their stringent action in regard to scarlet fever and enteric fever, is not calculated to inculcate the taking of any precautions on the part of their employees. There is, unfortunately, in the minds of many people a conviction that measles is not a serious disease and that its occurrence in childhood is almost inevitable. This is a pernicious doctrine, and, although apparently it has the tacit sanction of the postal authorities, it is contrary to the general principles of preventive medicine and to the best interests of public health. Mr. Elliott, in concluding his report, expresses the hope that his council will be able to arouse public opinion in regard to this matter, with a view to induce the postal authorities to alter their regulations. We are in complete sympathy with his action, and we share his surprise at the rule of the authorities in regard to measles. There are probably few people with families who would not be indignant if they knew that letters and other postal matter sent to them were handled by any person attending upon a case of measles, and who would not demand that those responsible for the working of the postal department should protect them and their families from an avoidable danger.

THE MEDICAL CURRICULUM AT THE UNIVERSITY OF EDINBURGH.

ONE of our Scottish correspondents gives this week a summary of a report submitted to, and approved by, the General Council of the University of Edinburgh on the medical curriculum. The report is the work of a small committee which was presided over by Professor E. A. Schäfer. The report has been forwarded to the University Court, and it lies with that body to determine what alterations are to be made and what alterations it is at liberty to make without applying for a new ordinance. It is one of the anomalies of University affairs in Scotland that the universities are hidebound by ordinances, and cannot move outside a given groove without the sanction of the sister universities. The recommendations of the report are in various respects commendable. The proposal to enable students to pass anatomy and physiology at the end of the second year and the suggestion to institute a block at that point are sound. Meanwhile, it is doubtful if the University can legally enforce such a block; but its application would do much to sift out unfortunates, and would prevent students nominally attending classes where they can only be a drag on their teachers and their fellows. The possible hardships of the block system have been thoroughly considered in debates at the General Medical Council and have been found to be exaggerated. The value of a scheme of education depends, however, very largely on the manner in which instruction is given, and the extent of ground which it is attempted to cover and which the student is expected to master. This is very true as regards such subjects as, say, chemistry, anatomy, and physiology. The temptation to the professor or lecturer is great to give instruction that is more suited to graduates than to young men being introduced to what is to them a totally new subject, and the standard of teaching naturally becomes the standard of examination, for in Scotland the teacher is also examiner. If the lecturer is content to cover, say, the physiology of the different systems, so as to give the student a foundation on which clinical teaching can be built, eight months' instruction is ample; but if more is attempted the result is that the student may never attain the sense of proportion or of perspective which it is desirable he should acquire; that he knows perhaps one system almost elaborately and another, equally important, most unsatisfactorily. A student might be able to take excellent muscle tracings and not be able to test for sugar in the urine or to determine the proportion of hæmoglobin in blood. There is a student's side as well as a professor's side to university education, and if the student can reasonably be expected to acquire an intelligent knowledge of subjects like chemistry and physiology in a few months it is of the first importance that general principles should be taught and only such detail as is necessary for an intelligent understanding of function. The systematic lecture is the traditional glory of the Scottish universities, and there is much to say in its favour, but the danger is that the lecture either degenerates into a dictation exercise and semi-coaching system, or rises quite above the level of the junior student. In a large teaching institution much depends upon the manner in which the junior student is introduced to the different subjects a knowledge of which he has to acquire. If teachers cannot bring themselves to this simplicity of attitude towards the student and take only their reasonable place in a teaching system, no scheme, however perfect it may look on paper, is of real value. Advanced instruction, research, and the extension of knowledge are the higher side of academic life, but ought to be kept clearly separated from the training of the average student, which is intended to make him a well-informed and intelligent practitioner of medicine, capable, however, of devoting himself later to any special department. We wish Edinburgh success in her efforts to improve her methods of teaching, and we shall await with interest the report which is looked for on the relations of the University, the extra-mural school, and the Royal Infirmary. That report ought to indicate the lines along which improvements in clinical teaching can be carried.

THE PROBLEM OF DISSEMINATED SCLEROSIS.

DISSEMINATED sclerosis is a common disease in this country, where it occurs with about three times greater frequency than in the United States. Next to tabes dorsalis it is perhaps the disease of the cerebro-spinal nervous system with which the practitioner is most familiar. The symptomatology of the affection, notwithstanding its various types, is in a characteristic case peculiarly easy of recognition; and its pathological anatomy, especially since the discovery of certain elective methods of staining, such as that of Bielschowsky, is well known. Its etiology, however, is still a problem of the greatest obscurity. The multiplicity of etiological factors enumerated in the average text-book is merely an indication of the poverty of our knowledge. To say that the disease originates in exposure to cold, in overwork, in strains, is to say nothing, when we remember that practically every nervous disease known to the medical profession has been attributed to the same causes. Oppenheim has with some reason suggested that metallic intoxications play a noteworthy rôle in the causation of the malady, yet it is quite impossible to consider these an etiological factor of universal applicability. Not a few cases have been reported where traumatism seems to have provided the starting-point of disseminated sclerosis, and these, in view of present-day legislation, are important; but if we are to seek a common etiological origin for the disease we cannot accept any morbid agents except those of widespread occurrence. On this ground it has been suggested that infective diseases precede the development of disseminated sclerosis with great frequency, notably typhoid fever and influenza. No doubt these conditions act by depressing the vitality of the nervous system and rendering it more vulnerable, but they cannot be considered as the primary causative instrument, for many patients present the characteristic symptoms of the disease who have never suffered from one or the other. It is a curious fact that post-partum debility not uncommonly provides the soil on which disseminated sclerosis develops; but again we must believe that the

patient's devitalisation allows some unknown morbific agent to attack the nervous system. There is, moreover, a disconcertingly large proportion of cases of this disease in which no antecedent exciting cause whatever can be traced; young patients who have lived all their lives in the country, under excellent conditions, and without having suffered from even so common a disease as measles, are often brought up to town hospitals with unmistakeable disseminated sclerosis. It seems, therefore, that we must either believe that a variety of causes can produce identical effects on the central nervous system or that we must look for some agent of a toxi-infective nature which has hitherto escaped identification. In this connexion it is of peculiar interest to record the fact that several recent examinations of cases of disseminated sclerosis have been more fertile of results. We need specify here only one—viz., that reported by M. Lejonne and M. Lhermitte in *L'Encéphale*, March, 1909. A young woman, aged 20 years, died after having exhibited the characteristic symptoms of the disease for five years. Plaques of sclerosis in every stage of development were found, from recent inflammatory foci to old areas of neuroglial sclerosis. The interesting fact is that all these recent foci surrounded a blood-vessel which remained patent, and that the affected area and the vessel walls were infiltrated with small round cells undoubtedly of inflammatory origin. It is legitimate to argue that this condition is highly suggestive of the action of some toxic or infective materies which is not apparently of the nature of ordinary pathogenic agents, inasmuch as it cannot be demonstrated by present histological methods, but which nevertheless is transmitted by the vascular system. The subject is a tempting one for further investigation.

THE DEATH OF PROFESSOR CANNIZZARO.

THE death of Professor S. Cannizzaro, which took place in Rome on Tuesday last, May 10th, at the ripe age of 84, recalls a time in the history of chemistry when considerable confusion prevailed as to atomic values, the confusion having been worse confounded by the fact that certain elements had more than one combining power. The great Italian chemist soon reduced matters to order in his classic thesis, "Sunto di un Corso de Filosofia Chimica," in which he threw light upon the methods employed for determining atomic weights. Above all he pointed out the great value of determining the vapour density of compounds, and he further showed how trustworthy as a confirmatory aid was the simple process of ascertaining the specific heat of elements. He was insistent upon distinguishing between atoms and molecules. Cannizzaro did much research work, he was joint discoverer with Cloëz of cyanamide, but was alone in the discovery of benzyl alcohol.

AN INTERNATIONAL CONGRESS ON THE CARE OF THE INSANE.

AN international congress concerning the care of the insane will be held in Berlin from Oct. 3rd to 7th. The congress will deal not only with questions referring to the modern treatment and the care of the insane, but also with measures and institutions for preserving mental health. An exhibition will be held in connexion with the congress and will include a history of the progress made in the treatment of the insane. The following papers will be read: On the Connexion between Civilisation and Insanity; Do Mental Diseases Increase in Number? on Sleeping Sickness; on the Care of Infants and Children as a Prophylactic against Epilepsy, Idiotism, and Mental Diseases; and Psychopathological Symptoms in Modern Art and Literature. For further particulars concerning papers and reports medical men are asked to apply to the secretary, Dr. Boedeker, Schlachtensee, near Berlin; concerning other matters to Dr. Falkenberg, Lichtenberg, Berlin, 79 Hernbergstrasse.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE following lectures at the Royal College of Physicians of London are announced to take place. The Croonian lectures will be delivered by Dr. F. W. Andrewes on Tuesdays and Thursdays, June 14th, 16th, 21st and 23rd, at 5 P.M. The Harveian Oration will be delivered by Dr. H. B. Donkin on Oct. 18th (St. Luke's Day), at 4 P.M., to be followed by the Harveian dinner at 7.30 P.M. The Bradshaw lecture will be delivered on Nov. 1st, at 5 P.M., by Dr. G. N. Pitt. The Fitz Patrick lectures will be delivered by Sir T. Clifford Allbutt on Nov. 3rd and 8th, at 5 P.M. The Horace Dobell lecture will be delivered by Dr. W. Bulloch on Nov. 10th, at 5 P.M.

THE THERAPEUTIC APPLICATIONS OF CALCIUM CHLORIDE.

IN view of the prominent place that has been given to the calcium salts by therapeutists during the past few years it is of interest to refer to a *résumé* of the therapeutic applications of calcium chloride by Dr. Moncany in a recent number of *La Clinique*. It has been employed more particularly in traumatic hæmorrhage, in purpura, hæmophilia, hæmorrhagic small-pox, and other hæmorrhagic diseases, and in hæmoptysis, in which its usefulness is a question of divided opinions. It has been given to increase the tonicity of the heart and vessels, in certain forms of headache, neuralgia, pruritus, eczema, and in urticaria. It has also been recommended in obstinate diarrhœa, epilepsy, laryngismus stridulus, convulsions, neurasthenia, hysteria, and mental alienation; its results in these cases are considered to be due either to its calmative or to its recalcifying action. Excellent results have been reported in the treatment of chilblains, acute œdema, serous effusions, œdema following vaccination, and viper bites. The eruptions that are liable to follow injections of anti-diphtheritic serum may in most instances be averted by the administration of a daily dose of calcium chloride on the day of the injection and the two following days. The dose of the calcium salt varies according to the quantity of serum injected, and must be increased when several injections are given. Dr. Moncany also refers to the use of calcium chloride in albuminuria, nephritis, pneumonia, tuberculosis, pregnancy, coryza, and rickets. The salt has been given by the mouth, subcutaneously, and per rectum. Wright found that the hypodermic method tended to cause sloughing. The intravenous method has been condemned on account of the supervention of thrombosis in experiments performed on dogs. Enemata containing calcium chloride are readily absorbed and are well borne by the patient. It is the usual practice to prescribe the calcium salts in small repeated doses, given by the mouth in dilute solutions. It is generally agreed that the treatment should be interrupted after a few days, as the continuous administration of the calcium salts tends to produce results which are just the opposite of those required. It is recommended to omit the treatment every fourth day, allowing a longer interval every eight or ten days. Calcium chloride must not be given to persons predisposed to calcic retention or atheroma, on account of which it is generally contraindicated in elderly persons, alcoholics, and persons suffering from lead poisoning. The best results will be obtained by cautiously administering the drug by the mouth, in small, divided doses, for brief periods with intervals of cessation. Calcium chloride may be combined with opiates in the treatment of hæmorrhage. Its intensely disagreeable taste has long militated against its employment. Perhaps

the best flavouring agents for masking the bitter, saline taste of calcium chloride are cinnamon and peppermint. Several formulas are given by Dr. Moncany, the simplest of which contains 150 grains of the salt in 10 fluid ounces of water, previously flavoured with syrup of peppermint. Two tablespoonfuls of the mixture are given for a dose. The following formula, devised by M. Roger, is fairly palatable: Calcium chloride, 60 to 90 grains; syrup of orange-peel, 10 fluid drachms; brandy, 1 fluid ounce; tincture of cinnamon, 1 fluid drachm; and water, 2 fluid ounces. Another formula, recommended by M. Peandelen of Nice, is probably the most satisfactory that has been devised: Calcium chloride, 90 to 120 grains; mucilage of acacia, 12 fluid drachms; tincture of cinnamon, 150 minims; water, 150 minims; and milk or almond emulsion, sufficient to make 6 fluid ounces.

IN consequence of the death of His Majesty King Edward, Patron of the society, no meeting of the Royal Society will be held until further notice. All meetings of the Royal Society of Medicine will be postponed until after the funeral. The President of the Royal Institution has decided that the lectures and evening meetings shall be discontinued until further notice. The annual dinner of the Royal Sanitary Institute, arranged for May 25th, has been postponed.

IN addition to the candidates whose names were mentioned in the last issue of THE LANCET, Mr. C. A. Ballance will, we understand, offer himself as a candidate at the approaching election of members of Council of the Royal College of Surgeons of England. An additional vacancy will be provided by the resignation of Professor G. A. Wright of Manchester before the termination of his term of office.

Alderman J. King Kerr, M.D., who has been chairman of the public health committee of the city of Belfast since 1904, has just resigned the position. The committee has passed a resolution recording on the minutes its sense of the loss it has sustained and its appreciation of the way Dr. King Kerr has discharged his duties.

THE next session of the General Medical Council will open on Tuesday, May 24th, when the President, Sir Donald MacAlister, K.C.B., will take the chair at 2 P.M.

UNIVERSITY OF LONDON: ADVANCED LECTURES IN PHYSIOLOGY.—A course of eight lectures on "The Mechanism of Coördination in the Central Nervous System" will be given by Dr. Gordon Holmes in the Institute of Physiology, University College, on Mondays at 5 P.M. The first lecture was delivered on May 9th. The syllabus is as follows:—Lecture 1.—Introduction. Coördination—definition. Structural and functional relationships of neurons. Spinal cord; arrangement of motor centres and distribution of afferent impulses. Lecture 2.—Spinal cord; internuncial and commissural fibres; grouping of the longer ascending tracts. Lecture 3.—Medulla oblongata and pons:—Arrangement of ascending tracts. Appearance of new centres and increase of associational system. Lecture 4.—Medulla oblongata and pons:—The labyrinth and the central connexions of the vestibular nerve. The formation of the cerebellar peduncles. Lecture 5.—The cerebellum; its structure; its afferent and efferent systems. The paracerebellar nuclei. Lecture 6.—The midbrain; its structure. The association of visual and auditory with other afferent impressions. Its descending tracts. Lecture 7.—The optic thalamus:—The terminal station of longer ascending tracts and of the ascending cerebellar fibres. The distribution of afferent impulses to the pallium. Lecture 8.—The cerebral cortex; differentiation and association of centres. The nature of the cortical motor centres and their connexion with lower centres.

SANITATION IN INDIA.

II.[1]

THE SANITARY REPORTS (*continued*).

THE review of the general aspect of sanitation may be compared with the health conditions and statistics of Bombay and Calcutta. The following were the comparative vital statistics in 1908:—

	Birth-rate.	Death-rate.
Bombay ...	32·4 per 1000	39·13 per 1000
Calcutta ...	20·1 ,, ...	32·3 ,,

Bombay.

With regard to the meteorological conditions here manifested, on the whole, a higher temperature in the earlier months prevailed than even in 1907. The maximum heat recorded (94 3° F.) was in April, the nearest approach to it being in March, 1901 (93·3°). The season was thus less favourable to the prevalence of plague, and accordingly we find that the disease gave the lowest figure recorded since its advent, for the total mortality was only 5361. This disease, however, was the cause of the greatest number of deaths, being followed in this respect by 2706 deaths from ague and remittent fever, by 1177 deaths from dysentery, and by 1026 from small-pox. Cholera only caused 95, and enteric fever 111 deaths.

Plague.—The most marked feature of the year's statistics is the diminished mortality from this disease, revealing an appreciable improvement on the record of the previous year. The total number of deaths yielded the rate of 5·48 per 1000. This is in marked contrast to the ratio per 1000 in 1903—viz., 26·78. The epidemic started later than usual and reached its zenith in April. The measures undertaken against the scourge were inoculation, rat destruction, evacuation, and disinfection. With respect to inoculation, although special and extended efforts were tried to popularise this method by lectures on the cause and prevention of the disease, and on the advantages of inoculation, yet the people did not respond sufficiently. In all there were 5894 operations performed during the year.

Dr. H. N. Choksy in his report on the serum-therapy of the disease shows the great importance of early treatment and the grave risk in postponing it till after the lapse of 48 hours. The mortality in cases treated in good time is from 15 to 25 per cent. better than in other cases.—It is held that with serum given early and in sufficient doses nearly every case of bubonic plague should get well, and that there is no reason to believe that the serum aggravated the disease when it was given to a patient actually ill with plague. Dr. Choksy also reports on the effect of extract renaglandin in the cardio-vascular paresis of plague, which extract he considers in no degree inferior to adrenalin for the same affection, whilst it is cheaper.

With regard to rat destruction, 374,386 rats were killed in the different parts of the city; the ratio of the animals found infected was 12·3 per cent. Every place where an infected rat was found or where a plague case occurred was treated with pesterine, and, further, all gullies and passages between houses were similarly dealt with regularly. Evacuation was found to be a popular precautionary measure which did not even require persuasion.

Fevers.—These reached 3403, of which 2706 were referred to ague and remittent fever. During the third quarter of the year a wave of malaria severer than usual swept over India and included Bombay in its evil effects. A careful examination of different localities in the city revealed several breeding places for mosquitoes; these were treated by the filling in of all pools or the application of kerosene oil. The removal of rank vegetation, barrels, empty tins, and iron basins from the compounds was ordered, as also disused chattis, garden tubs, and other receptacles accumulating rain-water and thus affording breeding places for mosquitoes during the rainy season, more especially towards its close. It was pointed out also how extensive building operations, involving the formation of ideal sites for the collection of water, favoured the increase of mosquitoes. Attention was drawn to the bad influence of private wells, of tanks and cisterns when not properly attended to. The large areas of

[1] No. I. was published in THE LANCET of May 7th, p. 1289.

low-lying ground on the outskirts of the city which become flooded in the monsoon and form an ideal breeding ground for the mosquito were recommended to be drained or, if not, filled in. Storm-water drains were advised to be attended to, whilst the rain-sodden patches of ground near the overcrowded houses were recommended to be paved and drained. The use of prophylactic doses of quinine was strongly urged. Mosquito gangs were instituted but were unavoidably not sufficient.

Mr. P. B. P. Ghadially, in his report of the analytical and bacteriological work done in 1908, states that experiments were made with a view to finding some chemical which when added to kerosene oil or pesterine would confer a bactericidal power on them in addition to their insecticidal properties. After trying various disinfectants it was found that kerosene oil when mixed with cyanide of mercury (1 in 500) acquired the double efficacy of a pulicide and disinfectant, and therefore it would be an ideal disinfectant for plague, cholera, or enteric fever, amongst other diseases, as it would destroy microbes and fleas and would keep off flies.

The executive health officer, Dr. J. A. Turner, has produced an excellent report, and it is evident the health requirements of Bombay are well looked after.

Calcutta.

The report for Calcutta is furnished by Dr. T. Frederick Pearse, the health officer.

Cholera.—With respect to the various diseases causing mortality we find that cholera accounted for 3694 deaths, a larger rate, with the exception of 1907, than has been recorded for the last 20 years. Dr. Pearse makes some apposite remarks on the fact that notwithstanding the improved and increased water-supply for the city the death-rate from the disease has been during the last two decades as great as, if not greater than, it was previously, while the past ten years have shown a higher mortality than the previous decade. Cholera is universally recognised as due to polluted drinking water and the persistence of the disease can, by a process of exclusion, only be attributed to the water of the river, the canal, and Tolly's Nullah. The recurring outbreaks are not always indigenous in origin, but may be owing to the import of infected individuals from infected regions in Bengal, with the concomitant pollution of the water-supplies. The health officer likewise draws up an eloquent table showing the great influence of festivals on cholera mortality, and in illustration of this fact 30 instances are quoted since 1891. The explanation of these outbreaks of the disease is that the festivals are accompanied by a free use of the foul waters of the Hoogly and Tolly's Nullah.

An interesting section of the report deals with the subject of *biliary cirrhosis of infants*, a peculiar disease now for many years recognised in Bengal. Lieutenant-Colonel Gibbons, I.M.S., read a valuable paper on it at the Bombay Medical Congress of 1891. In 1907 there were 636 deaths from the disease in Calcutta, and 727 in 1908. The etiology is obscure; it is most likely a parasitic disease, but there is no evidence to show whether it is microbic or not. One theory holds it to be due to the absorption of toxic material from the bowel, but it can hardly be due to errors of diet, as it occurs in sucklings and artificially fed infants and in children between one and two years of age, who are given all sorts of food. Notwithstanding this the mortality from diarrhœal disease in children is 21 per 1000 births compared with 31 per 1000 births in England and Wales.

With regard to *small-pox*, the year 1908 was a moderate one, only 578 deaths being recorded. In December, however, there was a sudden rise in the mortality (91 deaths) from that of the previous month. This was the beginning of the outbreak of 1909. Dr. Pearse enters very fully into the principles governing prophylaxis. We wish, if there were the slightest chance of any result from their so doing, that the opponents of vaccination would read his remarks on the striking value of this beneficent measure. He holds up for approval and adoption by Government in all its offices, by the railway companies, and by all commercial houses the good example afforded by the Bengal-Nagpur railway. On this railway it is a rule that if an employee contracts small-pox, such employee will not receive full pay during the necessary leave unless he can show that the whole of his family have been revaccinated.

The number of deaths from *plague* in 1908 was less than that of any year since 1899. The incidence in every feature was similar to that of former years. Rat destruction was carried out on a large scale, and large numbers of dead rats continued to be found in the streets. Inoculation has been offered, but here again only few persons have taken advantage of it.

With respect to *malaria*, there were fewer deaths (1533) than in 1907 (1808) and 1906 (2113). The comparative freedom of the old town (urban Calcutta) still continues. The ratio was only 1·2 per 1000, as compared with 2·9 per 1000 in the suburban wards. This is evidently due to the more complete drainage of the old town and to the greater part of its surface being covered with a more or less damp-proof material. Owing to the absence of funds mosquito brigades were not employed until after the rains.

Enteric fever gave rise to 106 deaths amongst Hindoos and nine amongst Mahomedans.

Dr. Pearse draws attention to a peculiar disease, "Sutika," a form of chronic diarrhœa with fever that occurs in Bengal in puerperal women, and causes a considerable number of deaths. Its nature is obscure. It is certainly not dysentery, nor tubercle, nor ordinary puerperal fever.

Dr. Pearse in his able report draws attention to various other matters which space forbids us to enter upon. In conclusion, we will deal with his remarks on the present method of sand-washing, which as now carried on, he well says, is a dirty and disgusting practice, involving the possibility of an imminent danger to the community. The whole question was clearly and forcibly put before the corporation not only by Dr. Pearse but by the chief engineer; but the only result was "that the consideration of this matter be postponed for a year." That the method alluded to deserves the description of the health officer is apparent when we consider that it involves, amongst other features, undestroyed pathogenic organisms being retained in the sand; that men stand up waist high in the washing water with soiled clothes, and possibly suffering from mild forms of cholera, typhoid fever, or dysentery. The water-supply for the whole city might be contaminated. The chief engineer during the year submitted proposals to instal a battery of the Berlin type of sand-washer in order to do away with the manual cleaning. The water-supply committee recommended the corporation to sanction the estimate for this, which was accepted and tenders called for. These were then considered by the general committee with the above result! The present system remains a constant danger to the water-supply.

HOSPITALS AND DISPENSARIES.

The numbers of patients treated by the institutions below in 1908 were as follows:—

—	Number of dispensaries.	In-patients.	Out-patients.
1. Calcutta	19	28,456	298,448
2. Burma	233	50,274	1,085,744
3. North-West Frontier Province ...	33	10,198	654,763
4. Eastern Bengal and Assam	522	26,246	3,245,167
5. Madras General Hospital	—	7,512	52,243
Totals	807	122,686	5,336,365

Administrative Medical Officers: 1. Colonel R. Macrae, I.M.S. 2. Colonel W. G. King, C.I.E., I.M.S. 3. Lieutenant-Colonel G. W. P. Dennys, I.M.S. 4. Colonel R. N. Campbell, I.M.S. 5. The Physicians and Surgeons to the Hospital.

The above figures will give some idea of the work performed for the Indian Government by the officers of the Indian Medical Service. The advantage accruing to the Government of India from such work amongst the natives of the country must be, in truth, incalculable, and the returns of other institutions which have not been sent to us would doubtless bear out the same tale.

Calcutta.

In Calcutta cholera, fevers, small-pox, dysentery, diarrhœa, and plague were less prevalent than in 1907. Especially was this the case with plague.

The case mortality from cholera at the Medical College Hospital deserves especial notice, inasmuch as it was only

36 per cent., as against 51 per cent. in 1907, the diminution being due to the adoption of better methods of treatment. The treatment followed consisted mainly of intravenous injections of large quantities of hypertonic salt solution, as recommended by Major Leonard Rogers, I.M.S.

Malarial fevers gave 43,437 cases (against 44,324 in 1907); dysentery and diarrhœa, 13,833 (against 15,233); plague, 92 (against 300); and small-pox, 258 (against 479). The last-named disease, however, is now raging in a virulent form and causing great mortality. This epidemic was foreseen, and Colonel Macrae, the Inspector-General, has met the emergency with energy.

The death-rate of the cases of enteric fever treated in the Presidency General Hospital was only 9·52 per cent., although many of the patients admitted came from places a considerable distance away, and at a late state of the disease. Beri-beri gave 25 cases with 5 deaths. The number of maternity cases at the Eden Hospital rose from 771 in 1907 to 841 in 1908, and as testifying to the excellence of the arrangements in this hospital it is to be noted that not a single case of septicæmia arose in it during 1907. The surgical operations performed in 1908 amounted to the large number of 33,368 (against 31,848 in 1907).

Most important improvements have been recently completed or are in progress in the Calcutta hospitals. As an example may be mentioned the substitution of gas for the old kerosene-oil lamps in the Campbell Hospital. The present report is the last one that will be submitted by Colonel Macrae as Inspector-General. Under him everything has worked smoothly, and he has made a model chief. He gratefully acknowledges the cordial coöperation he has received from medical officers of all ranks, but we may be allowed to remark that this cordial coöperation is just what would be expected towards so considerate an Inspector-General. There has not, unfortunately, been always so pleasant a relation between the Inspector-General and his junior officers.

Burma.

Colonel W. G. King, C.I.E., in his report for Burma for 1908 makes some very trenchant remarks concerning the poor prospects of the hospital assistants in this province, with the result that no large number of men come forward for entering the service. He clearly states that delay in settling this subject is not a matter that affects the conduct of work to-day; it will, however, mar the efficiency of the department in the near future. The medical department, again, cannot be administered without liberal financial support, and the Inspector-General rightly opines that Imperial aid for a short period by a special yearly grant is as necessary for hospitals in Burma as for sanitation. The sum actually awarded is hopelessly inadequate for the task demanded. This professional opinion is, moreover, corroborated by the Commissioner of the Irrawady Division and by that of an important official visitor. Colonel King seems to have the faculty of at once recognising where improvements are necessary. Such details as the correct equipment for aseptic work, improvement of the nursing staff, better condition of the operation rooms of hospitals, and the desirability of building bacteriological, vaccine, serum, pathological, and parasitological laboratories are all noted by him as absolutely necessary amongst other desiderata, such as electro-therapeutic plants.

Amongst the diseases remarked on, the Inspector-General draws attention to the advisability of organising a sanatorium for tuberculous disease. Especial attention is directed to the subject of yaws, and the services of an expert parasitologist and bacteriologist are shown to be demanded for the investigation of this disease. Beri-beri also earnestly demands investigation. Cases of Malta fever at Makwe and Rangoon were reported by Captain Walker and Captain A. Whitmore, I.M.S. Colonel King concludes his interesting report by according special praise to several medical officers who have worked under him, and also to Miss Sexton, superintendent of the Dufferin Hospital. Such praise is always stimulating.

North-West Frontier Province.

The annual report of the dispensaries of the North-West Frontier Province for the year 1908 is furnished by Lieutenant-Colonel G. W. P. Dennys, I.M.S. A satisfactory increase in the facilities afforded for medical relief in the province is shown, there being an addition of nine new dispensaries during the year, whilst two were closed. There is still room for more to be done. We are glad to see the generous aid afforded by the Nawab of Tonk in giving land for the site of a hospital, and by the Khans of Sam Ranizai similarly near Durgai.

The unhealthiness of the year chiefly contributed to the marked rise of patients, 654,763 out-patients and 10,198 in-patients having been treated, as compared with 565,639 and 10,097 respectively for 1907. There was a large increase in the attendance for cholera, which prevailed as a widespread epidemic in certain parts of the province. Lieutenant-Colonel Dennys draws attention to the difficulty of obtaining the services of men as assistant surgeons, and to the urgent need of improving their prospects. He recommends the creation of a senior grade amongst this class, and is in favour of certain civil surgeoncies being reserved for them. Difficulty has also been found very greatly to exist in the obtaining of qualified compounders on account of the small emoluments received. Lastly, this energetic officer draws attention to the unsatisfactory nursing of indoor patients, and states, as a matter of fact, that nothing exists at present deserving the name of systematic nursing.

(To be continued.)

WOMEN'S NATIONAL HEALTH ASSOCIATION OF IRELAND.

THE third annual meeting of the council of this association was held on April 19th and 20th in the lecture hall, Leinster House, Dublin, under the presidency of Her Excellency the Countess of ABERDEEN.

Annual Report.

The report stated that there were now 168 branches of the association, with a total of 17,543 members, 558 of whom were subscribing members. Over 378,048 leaflets, pamphlets, pictures, posters, and literature of all kinds bearing on health had been printed and distributed during 1909, and 80,500 in addition through the means of the Health Caravan. The Tuberculosis Exhibition Caravan, which was designed to meet the need of outlying places too poor to undertake the expense of a visit from the exhibition, had proved a very successful scheme. It had travelled all round Donegal, and had visited County Armagh, Tyrone, Fermanagh, and the West of Ireland. The funds for maintaining the caravan had been provided by the kindness of the trustees of the Pembroke Irish Charities. The caravan is about to resume its travels through the Counties of Limerick and Kerry. The medical lecturer being unable to take this tour, Miss Fitzgerald, one of their health lecturers, would take her place, and Miss Manderson would give cookery demonstrations and lectures to children. A refreshment van, selling hot and cold pasteurised milk and other nourishing and wholesome food and drinks, had been established by the association in the Phœnix Park during the winter, especially for the benefit of the football players. The first of the disused coastguard stations taken over by the association was opened as a holiday home for preventive cases on August 4th, and since then had received 81 inmates, who had all much improved in health. They came from surroundings where they had been exposed to infection from tuberculosis, but were certified free from the disease themselves before admission. The funds for equipping this home, and maintaining it for five months, were provided by friends at Boston, Mass. The Dublin Pasteurised Milk Depôt, 62, Sitric-road, continued to show most excellent results, as regarded the health of the infants. Most of the infants sent to the depôt were weakly, and were sent there by the medical men because their mothers could not nurse them. Yet it was calculated that the mortality amongst these babies was only 4½ per cent., as against the average Dublin infant mortality of 14½ per cent. Distributing depôts had been started in different quarters of the city.

Dublin Tuberculosis Nurses.

The Dublin Hospitals Tuberculosis Committee was formed in November, 1907, to supervise a scheme of home treatment of consumptive patients by specially qualified Queen's Nurses, under a system of voluntary notification, through the medical staffs of the Dublin hospitals and the Poor-law

dispensaries. It is constituted of medical representatives, one being appointed by each of the ten clinical hospitals in Dublin. Last year the committee was enlarged so as to embrace the Poor-law Medical Service, which sent four representatives. The nurses visit the homes of the patients referred to them, and, aided by the Dublin Women's National Health Association Samaritan Committee, put the sufferers in a position to carry out the medical instructions given to them. The nurses are provided by the Women's National Health Association of Ireland, and when a patient has no medical attendant the association also provides for the supervision of the case by a fully qualified physician. 362 patients were visited by the nurses, and 7275 separate visits were paid. This latter figure represents 140 average weekly visits. 87 patients (or 24 per cent. of the whole number) have shown signs of improvement. 24 patients (being 7 per cent. of the whole, or 27·6 per cent. of those improved) have been able to return to their ordinary work during the year. 100 patients, chiefly through the exertions of the nurses, have been admitted into sanatoriums, hospitals, and kindred institutions. 87 children of parents suffering from tuberculosis have been sent to the country through the Fresh Air Fund. 20 cases which had been exposed to the infection of tuberculosis, but which were certified by their medical man to be free from the disease, were sent to the holiday home, Sutton.

At the evening meeting, at which His Excellency the LORD LIEUTENANT presided, a lecture on

The Need of Medical Inspection in Schools

was delivered by Mr. T. JONES, professor of economics at Queen's University, Belfast. Professor Jones pointed out that the inspection of school premises and the medical examination of school teachers had gone on for some years, but before 1897 there was practically no examination of the school child. Now there were 307 school medical officers in the 328 educational areas into which England and Wales are divided. To these there were to be added 616 assistant medical officers, 122 of whom devoted their whole time to the work of inspection of school children. This medical inspection was showing that the problem of disease and physical unfitness from infancy to the end of school life was one and the same thing, and that the conditions which produced high infantile mortality were exercising injurious influence on the childhood of the State beyond infancy.

The meeting was continued on the following day, when various discussions took place. Amongst the subjects dealt with were Local Tuberculosis Hospitals, Hygiene on Railways, Infantile Mortality, and the Condition of Irish Schools. The Caherdaniel Branch of the association wished to bring forward a resolution concerning the dangers of patients with advanced tuberculosis returning from America, and the resolution was according moved by Miss O'CONNELL in the following terms:—

That the Women's National Health Association of Ireland, being informed that in some districts in Ireland nearly all the cases of consumption originate from infection spread through advanced cases of consumption returning from other countries, desire to approach the Government with a view to taking steps to arrange that the identification of deported cases of consumption from the United States of America, Canada, and other countries should be made direct to the Irish Local Government Board, as well as to the emigration headquarters in London, and that copies of this resolution be forwarded to the Lord Lieutenant, the Chief Secretary, the Irish Local Government Board, and the Emigration Headquarters.

The motion was carried unanimously.

ASYLUM REPORTS.

City of London Asylum, Stone, near Dartford (Report for the Year 1909).—At this asylum the average number of patients daily resident for the year 1909 was 577, as against 570 in 1908. 79 males and 65 females were admitted, making a total of 144. It is interesting to note that among these recovery seemed probable in 26 cases, possible in 46 cases, improbable in 46 cases, and impossible in 27 cases. 109 patients were discharged, and amongst these there were 32 recoveries. The proportion (per cent.) of recoveries to admissions was 29·90 for the two sexes. 31 patients died during the year and 22 necropsies were made. The proportion (per cent.) of deaths to the daily average number resident was 5·37 for the two sexes. The resident physician and superintendent, Dr. R. H. Steen, reports that the new verandahs recently constructed have been of great use in the treatment of patients. The method of treatment by keeping the patients at rest in bed in the open air by day and night is adopted in all fresh cases, and the chief results apparent are diminution in excitement, production of sleep without drugs, and stimulation of appetite.

Ayr District Asylum (Report for the Year 1909).—The admissions for this year numbered 156. The daily average number resident during the year was 536·67, being 13·94 more than last year and 19·67 above the previous record. The number of patients discharged was 79. In the matter of recoveries there is a considerable improvement on last year's figures, being 32·6 per cent. as compared with 22·7 per cent. calculated on the numbers admitted. The number of deaths was 82, or 18·68 per cent. of the average number daily resident. This constitutes a record and has been brought about by a considerable increase among the men, while nearly half of such deaths occurred in those cases which had been resident less than 12 months.

Crichton Royal Institution, Dumfries (Report for the Year 1909).—The average daily number resident at this institution was 845. Voluntary boarders numbered 60, this being the highest number hitherto reached in the course of a year. There were 160 admissions, representing 157 persons, three men having been admitted twice in the year. The mean age of the patients on reception was 45 years. Three fifths belonged to the middle period of life, between 30 and 60 years, one-fifth were below 30, and one-fifth above 60. There were 121 discharges during the year, representing 119 persons, of whom 92 were certificated and 27 were voluntary boarders. 18 of the voluntary boarders were restored to health and the others, with the exception of 2, were much improved. Of the 92 certificated patients, 56 left recovered, and the recovery rate, based on the receptions, was 50 per cent. The forms of mental affection recovered from were chiefly melancholia and mania, and in 70 per cent. of the recoveries the mental illness had lasted in all less than a year. During the year 66 certified patients and 1 voluntary boarder died. The mortality rate among certified patients, based on the average resident population, was 8·1 per cent. Necropsies were performed in 75 per cent. of the deaths. Dr. C. C. Easterbrook, the physician superintendent, reports the establishment of three Crichton Fellowships in clinical neurology and psychology, in pathology and bacteriology, and in pathology and chemistry, having reference to the nervous system. These Fellowships are of the value of £250 a year each, with board, quarters, attendance, and laundry, or an allowance of £50 a year in lieu of these. It is satisfactory to note that the valuable material contained in our British mental hospitals and asylums is being increasingly made use of, especially where, as in this case, the managing bodies of such institutions have in an enlightened spirit sought to establish efficient laboratories controlled by properly qualified persons.

Kingseat Asylum, Aberdeen (Report for the Year 1909).—At this asylum the total number under treatment was 14 in excess of last year, the average daily number being 434. The admissions numbered 118. General paralysis again showed an increase. Dr. H. de Maine Alexander, the medical superintendent, points out that this disease is liable to be overlooked in its prodromal stage on account of the absence of the typical mental symptoms supposed to be usually associated with the disease, though in fact these mental symptoms are more often absent than present, the abnormal physical signs alone pointing to the disease. The discharges numbered 54, while the percentage of recoveries on the admissions was 27·9. We are happy to notice that a beginning has been made in boarding out patients in the vicinity of the asylum, the patients being visited at intervals by Dr. Alexander himself. The patients are well cared for, treated as ordinary members of the household, attend church with their guardians, and from time to time visit the asylum for entertainments. Deaths in the asylum numbered 27 during the year, the figure giving a death-rate of 6·2 per cent. on the average number resident.

Barnwood House Hospital for the Insane, near Gloucester (Report for the Year 1909).—At this hospital the average number daily resident was 148, of whom 58 were males and 90 females. 35 patients were admitted and of these six were transfers. 27 patients were discharged and of these 14 were discharged recovered, this being a percentage of 40 per cent.

calculated upon the total admissions. The number of deaths was 5, the death-rate being 3·37 per cent. calculated upon the daily average number resident. Concerning the statistical tables appended to the report Dr. J. G. Soutar very wisely points out that it cannot be pretended that the whole truth is told in any given case. "As it is beyond the power of the biographer to fully ascertain, or to analyse, or to truly estimate the conditions, the circumstances, the influences which operate through progenitors and directly on the individual, to build up in his subject a vigorous mind and strong character, so he who carefully inquires into the causes of mental defect and failure finds himself baffled by the multitude and the subtlety of the factors involved." The study which the compilation of the tables necessitates does, however, assist the physician in enabling him to prescribe the proper *régime* for a patient on recovery.

BRITISH MEDICAL BENEVOLENT FUND.

AT the April meeting of the committee 27 cases were considered and grants amounting to £251 made to 24 of the applicants. Appended is an abstract of the cases assisted:—

Daughter, aged 63 years, of late M.R.C.S. Has a small weekly allowance from a medical provident society. Mental condition such that, whilst unsuitable for an asylum, a certain amount of supervision is necessary and the cost of living consequently increased. Relieved 11 times, £108. Voted £12.

Widow, aged 51 years, of L.R.C.P., L.R.C.S. Edin. Has a little Irish property, but rent is greatly in arrears. Three children, but none able to help and one in ill-health. Relieved twice, £12. Voted £12.

M.R.C.S., aged 64 years. Lost a considerable amount in a practice which did not turn out as represented, and is now in feeble health, which prevents anything but light and occasional work. Two sons, aged 21 and 19 years, who give as much help as possible. Relieved twice, £20. Voted £10.

Widow, aged 88 years, of M.R.C.S. Receives an old-age pension and 5*s.* per week from a benevolent society. No children; practically bedridden. Voted £6.

Widow, aged 38 years, of L.R.C.P., L.R.C.S. Edin. Endeavours to maintain herself by nursing, which necessitates boarding out her two children. Relieved four times, £30. Voted £10.

Widow, aged 58 years, of L.R.C.P., L.R.C.S. Irel. After husband's death took a post as housekeeper, but health has quite broken down and she is now practically destitute. No children. Relieved twice, £10. Voted £18.

Widow, aged 61 years, of L.R.C.P. Edin. Has supported herself for many years by taking boarders, but finds them increasingly difficult to obtain. Three children, one of whom has just developed phthisis. Relieved four times, £48. Voted £12.

Widow, aged 45 years, of M.R.C.S., L.R.C.P. Has a small annuity, but asks for assistance towards school fees of her two children, aged 16 and 13 years. Health very indifferent. Relieved six times, £85. Voted £5.

Widow, aged 62 years, of L.R.C.P. Edin. Health too delicate to undertake any occupation, and is entirely dependent on a brother-in-law. No children. Relieved once, £12. Voted £12.

Daughter, aged 35 years, of late M.D. Glasg. Has maintained herself by massage for several years, but is at present incapacitated owing to the results of rheumatic fever. Relieved once, £10. Voted £10.

Widow, aged 62 years, of L.R.C.P. Edin. No income and is quite incapacitated by an incurable complaint. Occasional slight help from a son. Relieved four times, £48. Voted £12.

M.R.C.S., aged 71 years. Quite incapacitated and dependent on children, who make a small monthly allowance. Relieved once, £12. Voted £2, and to be advised to apply for an old-age pension.

Widow, aged 49 years, of M.R.C.S. No income, endeavours to support herself by needlework. Health indifferent and eyesight failing. Children unable to help. Relieved eight times, £83. Voted £12.

Widow, aged 60 years, of L.S.A. Lets lodgings, but finds difficulty in paying her rent. Slight help from children. Relieved eight times, £90. Voted £10.

Daughter, aged 63 years, of M.D. Lond., M.R.C.P. Has recently been elected to a small annuity, but the income is insufficient for the bare necessities of life. Relieved three times, £27. Voted £5.

Daughter, aged 60 years, of late M.D. Edin. Has given music lessons for many years, but finds increasing difficulty in obtaining pupils. Relieved three times, £30. Voted £10.

Widow, aged 69 years, of M.D. Aberd. Only income a small monthly allowance made by a friend. Children unable to help. Relieved nine times, £114. Voted £10.

Daughter, aged 64 years, of late F.R.C.S. Only income £10 a year from a Society for the Relief of the Blind. Is in bad health and almost destitute. Relieved five times, £42. Voted £12.

Widow, aged 58 years, of L.R.C.P. Edin. No income; lets lodgings, but had a very bad season last year and the receipts are barely sufficient for rent and rates. Relieved seven times, £82. Voted £12

Widow, aged 61 years, of M.R.C.S. Lets lodgings, but has had some of her rooms vacant for some time. Six children, but only one able to help and one a chronic invalid. Relieved four times, £52. Voted £18.

Widow, aged 47 years, of L.R.C.P., L.R.C.S. Edin. No income; two sons, both sailors, but only one able to give slight help. Relieved six times, £32. Voted £12.

Daughter, aged 60 years, of late M.R.C.S. Acts as housekeeper to her brother but receives no salary. Relieved eight times, £120. Voted £12.

Daughter, aged 55 years, of late L.F.P.S. Glasg. Receives £10 a year from a fund for assisting indigent gentlewomen and lives rent free. Health too feeble to allow of any occupation. Relieved three times, £36. Voted £12.

Daughter, aged 26 years, of late M.R.C.S. Has taken out a course of cookery and hopes shortly to be able to maintain herself. Relieved three times, £17. Voted £5.

Looking Back.

FROM

THE LANCET, *SATURDAY*, May 3rd, 1851.

Extract from a leading article in reference to Mr. Propert's proposal to found a Medical College at Epsom.

We highly approve of the plan of supporting a number of medical pensioners, but we give our special support to the collegiate department of the proposed institution. ..... At the Marlborough College, exhibitions and scholarships have been founded, and are still in process of formation, with a view of sending the most distinguished scholars to Oxford and Cambridge, to complete their education, and to struggle for the great prizes which those venerable seats of learning offer. Already some of the highest honours in the Universities have been carried off by the *élèves* of this recently established school.

We should be delighted at such a prospect for our medical youth. The old physicians were amongst the most munificent donors to the Universities; yet by some misarrangement the children of the profession seem quite separated from these repositories of wealth and lore. The proposed college ought to supply an excellent education to all, and in this way it would be an inestimable boon to the profession, but to distinguished scholars it ought to give the means of proceeding to the universities and wresting away some of that fame and emolument which now almost seem the prescriptive rights of the other professions. We are persuaded that, with fair play, the intellect of the medical youth of this country would win triumphs conferring lustre on the entire profession.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 77 of the largest English towns 8476 births and 4258 deaths were registered during the week ending May 7th. The annual rate of mortality in these towns, which had been equal to 15·0, 13·7, and 13·1 per 1000 in the three preceding weeks, was again so low as 13·1 in the week under notice. During the first five weeks of the current quarter the annual death-rate in these towns averaged 14·0 per 1000, and in London during the same period the rate did not exceed 13·6 per 1000. The lowest recorded annual rates of mortality during last week in these 77 towns were 5·8 in Hornsey, 6·3 in Willesden and in Tottenham, and 6·6 in Leyton, all being suburban Metropolitan districts; the rates in the other towns ranged upwards, however, to 19·4 in Great Yarmouth, 19·9 in Oldham, 21·6 in Merthyr Tydfil, and 22·3 in Stockton. In London the recorded death-rate last week did not exceed 12·5 per 1000. The 4258 deaths registered last week in the 77 towns showed an increase of but 9 on the low number returned in the previous week, and included 386 which were referred to the principal epidemic diseases, against 345 and 364 in the two preceding weeks; of these 386 deaths, 160 resulted from whooping-cough, 116 from measles, 44 from diarrhœa, 30 from diphtheria, 24 from scarlet fever, and 12 from enteric fever, but not one from small-pox. The mean annual rate of mortality in the 77 towns last week from these epidemic diseases was equal to 1·2 per 1000, against 1·1 in each of the two preceding weeks. No death from any of these epidemic diseases was registered last week in Bristol, Willesden, Brighton, Derby, Southampton, or in 10 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 2·8 in Manchester, 3·0 in Bootle, 3·3 in Merthyr Tydfil, and 3·5 in South Shields. The fatal cases of whooping-cough in the 77 towns, which had been 143 and 138 in the two preceding weeks, rose to 160 last week; they caused annual death-rates equal to 1·4 per 1000 in Bolton, 1·5 in Salford, 1·6 in Rotherham, and 2·2 in South Shields. The 116 deaths from measles slightly further exceeded the numbers in the two previous weeks; the highest death-rates from this disease during the week were 1·6 in Croydon, 1·7 in East Ham, 1·9 in Burton-on-Trent, and 2·0 in Merthyr Tydfil. The 44 deaths attributed to diarrhœa also showed an increase

upon recent weekly numbers. The 30 deaths referred to diphtheria were, however, 10 below the number in the previous week; they included 3 in Manchester, 3 in Birmingham and King's Norton, and 2 in Bournemouth. The fatal cases of scarlet fever, which had been 27 and 20 in the two preceding weeks, rose again last week to 24, of which 8 occurred in London and its suburban districts, 4 in Liverpool, and 3 in Manchester and Salford. The 12 deaths referred to enteric fever included 3 in Liverpool and 2 in Nottingham. The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had steadily declined in the 29 preceding weeks from 2810 to 1509, further fell to 1506 during last week; 179 new cases of this disease were admitted to these hospitals during last week, against 196 and 192 in the two preceding weeks. Of the 1167 deaths registered in London during the week under notice 211 were referred to pneumonia and other diseases of the respiratory system, showing a further decline from the numbers returned in recent weeks; these 211 deaths were 63 below the corrected average number in the corresponding week of the five years 1905–09. The causes of 40, or 0·9 per cent., of the deaths registered in the 77 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during the week were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, and in 52 other smaller towns; the 40 uncertified causes of death in the 77 towns last week included 7 in Liverpool, 5 in Birmingham, 4 in Hull, and 3 both in Manchester and in Barrow-in-Furness.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 980 births and 564 deaths were registered during the week ending May 7th. The annual rate of mortality in these towns, which had been equal to 16·3 and 17·4 per 1000 in the two preceding weeks, declined to 15·6 in the week under notice. During the first five weeks of the current quarter the death-rate in these towns averaged 17·2 per 1000, and exceeded by 3·2 the mean rate during the same period in the 77 largest English towns. The annual death-rates last week in these eight Scotch towns ranged from 9·0 and 11·8 in Leith and Aberdeen, to 17·7 in Greenock and 28·8 in Dundee. The 564 deaths from all causes in the eight towns during last week showed a decline of 66 from the number in the previous week, and included 87 which were referred to the principal epidemic diseases, against numbers declining from 123 to 76 in the four preceding weeks. These 87 deaths were equal to an annual rate of 2·4 per 1000; the mean death-rate from the same diseases in the 77 English towns last week did not exceed 1·2 per 1000. These 87 deaths in the Scotch towns last week included 52 from measles, 12 from diarrhœa, 11 from whooping-cough, 7 from scarlet fever, 4 from diphtheria, and 1 from "fever," but not one from small-pox. The fatal cases of measles in the eight towns, which had in the four preceding weeks declined from 74 to 44, rose again last week to 52, and included 26 in Dundee, 13 in Glasgow, 7 in Edinburgh, and 5 in Greenock. The 12 deaths attributed to diarrhœa showed a decline from the numbers in recent weeks; 5 were returned in Glasgow, 3 in Dundee, and 2 both in Edinburgh and in Perth. The fatal cases of whooping-cough, which had been 6 and 7 in the two previous weeks, rose to 11 last week, of which 7 occurred in Glasgow. Five of the 7 deaths from scarlet fever were registered in Glasgow; and of the 4 fatal cases of diphtheria 2 occurred in Paisley. Only one death during the week was referred to "fever"; it was recorded in Greenock. The deaths in the eight towns referred to diseases of the respiratory system, which had been 92 and 93 in the two preceding weeks, declined last week to 77, and were 11 below the number in the corresponding week of last year. The causes of 13, or 2·3 per cent., of the deaths in the eight towns last week were not certified or not stated; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent.

HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,151,790 persons, 629 births and 443 deaths were registered during the week ending May 7th. The mean annual rate of mortality in these towns, which had been equal to 23·2, 22·4, and 22·0 per 1000 in the three preceding weeks, further declined to 20·1 in the week under notice. During the first five weeks of the current quarter the annual death-rate in these Irish towns averaged 22·2 per 1000, whereas the mean rate during the same period did not exceed 14·0 in the 77 largest English towns, and 17·2 in the eight principal Scotch towns. The annual death-rate during last week was equal to 16·7 in Dublin, 22·3 in Belfast, 25·3 in Cork, 18·0 in Londonderry, 12·3 in Limerick, and 29·2 in Waterford; the mean annual death-rate last week in the 16 smallest of these Irish town districts was equal to 22·0 per 1000. The 443 deaths from all causes in the 22 town districts last week showed a further decline of 42 from the numbers in recent weeks, and included 43 which were referred to the principal epidemic diseases, against 41 and 39 in the two preceding weeks; these 43 deaths were equal to an annual rate of 1·9 per 1000; in the 77 English towns the mean rate last week from the same diseases did not exceed 1·2 per 1000, while in the eight Scotch towns it was equal to 2·4. The 43 deaths from these diseases in the Irish towns last week included 20 from measles, 14 from whooping-cough, 5 from "fever," 3 from diarrhœa, and 1 from diphtheria, but not one either from small-pox or scarlet fever. The 20 fatal cases of measles in the 22 towns corresponded with the number in the previous week and included 19 in Belfast. The 14 deaths from whooping-cough exceeded the number in the previous week by 2; 6 occurred in Drogheda, 4 in Belfast, and 2 in Limerick. Two of the 3 deaths from diarrhœa were registered in Belfast. The 4 deaths referred to enteric fever included one each in Dublin, Cork, Waterford, and Queenstown. The deaths in the 22 towns referred to pneumonia and other diseases of the respiratory system, which had declined in the four preceding weeks from 129 to 96, further fell last week to 93. The causes of 14, or 3·2 per cent., of the deaths registered in the Irish towns last week were not certified; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent., and in the eight principal Scotch towns it was equal to 2·3 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Her late Majesty's Order in Council of April 1st, 1881, Fleet-Surgeon Lawrence Bidwell has been placed on the Retired List at his own request (dated May 2nd, 1910).

The following appointments are notified:—Staff-Surgeons: O. Mills to the *Virid*, additional, to be lent to Plymouth Hospital; W. P. Walker to Plymouth Hospital.

The undermentioned Surgeons have been promoted to the rank of Staff-Surgeon in His Majesty's Fleet:—Leonard Sykes Whitwam (dated Feb. 26th, 1910), John George Peebles, Elijah Richard Lockwood Thomas (dated Feb. 8th, 1910).

In accordance with the provisions of the Order in Council of April 1st, 1881, Fleet-Surgeon Edward Pain Mourilyan has been placed on the Retired List, with permission to assume the rank of Deputy Inspector-General of Hospitals and Fleets (dated April 25th, 1910).

ARMY MEDICAL SERVICE.

Major Bertal H. Scott, R.A.M.C., to be a Deputy Assistant Director-General at the War Office, vice Major H. J. M. Buist, D.S.O., whose tenure of that appointment has expired (dated May 1st, 1910).

ROYAL ARMY MEDICAL CORPS.

Major Charles H. Hopkins is placed temporarily on the Half-pay List on account of ill-health (dated April 30th, 1910).

Lieutenant-Colonel S. C. Philson, from the London District, has, on arrival in India, been appointed to command the station hospital at Delhi, vice Lieutenant-Colonel W. E. Berryman. Lieutenant-Colonel S. Powell has been transferred from Maymyo to Rangoon. Lieutenant-Colonel H. Carr, from the Royal Victoria Hospital, Netley, has been

appointed to command the station hospital at Jullundur. Major W. C. Poole, from Buttevant, has joined for duty at Rawalpindi. Major J. W. Bullen, from Madras, has been appointed to command the station hospital at Wellington Sanatorium. Major B. J. Inniss from Meerut has been posted to Gravesend. Major F. J. Wade-Brown has taken up duty in the Cork District. Major W. D. Erskine has been transferred from Strensall to York. Major C. Dalton has been appointed Staff Officer to the Principal Medical Officer of the Irish Command. Major C. W. Profeit, from the Military Hospital, Bulford Camp, Salisbury Plain, has been appointed to Rochester Row Military Hospital, London, S.W. Captain R. T. Collins has been transferred from Chakrata to Meerut. Captain R. J. Cahill, on completion of a course of instruction at the X Ray Institute at Dehra Dun, has been posted to Bangalore. Captain J. D. Richmond, from Quetta, has joined Cork District. Captain F. Forrest, from Ambala, has been posted to Kasauli. Captain D. de C. O'Grady has been transferred from Nowshera to Rawalpindi. Captain J. H. Douglas and Captain M. Sinclair, on return from a tour of foreign service in India, have been posted to the Irish Command. Captain L. M. Purser, from Colchester, has been appointed a Specialist in Otology and Rhinology to the Second (Rawalpindi) Division. Lieutenant G. H. Stack, from Aldershot, has embarked for a tour of service on the West Coast of Africa. Lieutenant T. H. Scott and Lieutenant A. G. Wells have been transferred from Lahore Cantonment to Ferozepore for duty at the station hospital. Lieutenant C. H. O'Rorke, from Birr, has been posted to the Curragh. Lieutenant A. W. Byrne has been transferred from Lancaster to Manchester. Lieutenant W. E. C. Lunn has been appointed staff surgeon at Lahore Cantonment.

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel T. W. Stewart, on return from leave, has been appointed to the civil medical charge of the Akyab District, vice Major J. Penny, proceeding on leave. Lieutenant-Colonel C. C. Manifold has been promoted Colonel. Lieutenant-Colonel J. T. Daly has been granted one year's furlough. Major H. Ainsworth has been appointed Professor of Ophthalmic Surgery at the Medical College, Lahore. Major W. Selby, Civil Surgeon at Azamgarh, has been appointed an Honorary Surgeon to H.E. the Viceroy of India and transferred to Gorakhpur, vice Major C. Milne, granted leave. Major J. M. Crawford, Civil Surgeon at Benares, has been granted privilege leave combined with furlough for six months. Major E. R. Parry, superintendent of the Central Jail at Dacca, has been granted eight months' combined leave. Major T. Jackson has arrived home. Major B. Oldham, Civil Surgeon at Patna, has been appointed to the medical charge of the 24th Pergunnas at Alipore, vice Major F. O'Kinealy. Major J. H. McDonald, on return from leave, has been appointed to officiate as Civil Surgeon at Belgaum, vice Major H. Bennett. Captain I. M. Macrae has been appointed to officiate as Superintendent of the Central Prison at Lucknow, vice Major C. B. Prall. Captain L. E. Gilbert, Civil Surgeon, Traunggyi, has been granted two years' leave. Captain R. D. Saigol has been posted to Meikhta as Civil Surgeon, vice Captain E. A. Walker, transferred to Bassein to relieve Major P. Dee, who has proceeded on leave. The services of Captain J. Husband have been placed at the disposal of the Government of Burma.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Duncan Macfadyen to be Lieutenant (on probation) (dated Feb. 26th, 1910).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Welsh Border Mounted Brigade Field Ambulance: Lieutenant William Smith, from the Eastern Mounted Brigade Field Ambulance, Royal Army Medical Corps, to be Lieutenant (dated March 1st, 1910).

1st East Lancashire Field Ambulance: Joseph Marshall Postlethwaite to be Lieutenant (dated Feb. 2nd, 1910). Lieutenant Cecil W. Hutt resigns his commission (dated March 31st, 1910).

3rd East Lancashire Field Ambulance: Henry Herbert Rayner to be Lieutenant (dated Feb. 3rd, 1910).

1st Southern General Hospital: Major Robert M. Simon to be Lieutenant-Colonel (dated August 5th, 1909). Captain James W. Russell to be Major (dated August 5th, 1909).

THE COURSE OF INSTRUCTION AT HASLAR.

The course of instruction of the newly entered Surgeons at Haslar was brought to a close on April 7th by the distribution of the prizes by Inspector-General James Porter, C.B., K.H.P., Director-General of the Medical Department of the Royal Navy. The gold medal was gained by Surgeon R. J. G. Parnell (King's College Hospital), and the silver medal was awarded to Surgeon J. H. B. Martin (University of Cambridge and London Hospital). These two officers took the first and second places respectively in the combined London and Haslar examinations. Three Navy Regulation pocket cases—prizes for subjects in which instruction is given at Haslar—were awarded to Surgeons R. J. G. Parnell, J. H. B. Martin, and T. C. Patterson. The following list shows the places gained by the combined marks of the London and Haslar examinations:—

	Marks.		Marks.
R. J. G. Parnell	5037	F. C. Searle	4434
J. H. B. Martin	4690	A. G. V. French	4374
F. L. Smith	4620	W. E. Lloyd	4322
C. D. Bell	4585	J. P. Barry	4201
T. C. Patterson	4552	C. G. Sprague	4044
M. H. Langford	4526	A. C. Rusack	3980
A. Fairley	4489		

ROYAL ARMY MEDICAL CORPS EXAMINATIONS.

An examination of candidates for not less than ten commissions in the Royal Army Medical Corps will be held on July 27th and following days. Applications to compete should be made to the Secretary, War Office, London, not later than July 18th, on which date the list will be closed. The presence of candidates will be required in London from July 25th.

AN OFFICERS' TRAINING CORPS IN DUBLIN.

The opportunity which has recently been opened to the students of Trinity College and those of the Royal College of Surgeons in Ireland of undergoing a course of voluntary training for military service has been extensively utilised. It was well known that the idea would be popular with Irish students, and proof has been furnished by the fact that within a few weeks of the inception of the movement some 200 names of students have been enrolled at Trinity College, and about 70 at the Royal College of Surgeons. The organisation is, inevitably, not quite complete at present, and stores and equipments of various kinds have still to be provided; but the cadets, as the members are called, have already commenced the performance of the preliminary drills. Dr. A. C. Geddes, Acting Professor of Anatomy at the Royal College of Surgeons, who has taken an enthusiastic part in the organisation of the Officers' Training Corps, served with the army in the Boer war, and contradicts the view that such systematic military training is a waste of time of even the medical student preparing for examinations, as he calculates that not more than an average of two hours per week will be spent in the training.

A recent Admiralty circular states that "It is contemplated that the 'command' of all officers of branches, other than the military branch, over their subordinates in their own departments shall be as definite as that of officers of the military branch." Unless this is mere temporising the power of Inspectors-General over the staff of naval hospitals should, therefore, soon be clearly defined.

MEDICAL MISSIONS.—The Medical Mission Auxiliary of the Church Missionary Society held its annual meeting in the Queen's Hall, London, on May 6th, Mr. A. Carless being in the chair. The annual report was read by the Rev. R. Elliott, L.R.C.S.Irel., secretary to the Medical Committee, and showed that the society now maintains 50 hospitals in various parts of the world, with a total of 3075 beds in which over 29,000 patients were treated last year, besides which over 1,100,000 visits of out-patients were recorded. The chairman drew attention to the magnitude of this work, to the economical administration—the expenditure being less than £40,000—and to the high qualifications of the men engaged in it; one of the missionaries present on the platform (Dr. T. L. Pennell) was a gold medallist, and all were men who would have been in the front rank of the profession at home. The meeting was also addressed by Dr. B. van Someren Taylor, of Hing-hwa, China; Dr. Pennell, of Bannu, on the north-west frontier of India; and Mr. J. H. Cook, of Mengo, Uganda, who gave some account of their work as medical missionaries.

Correspondence.

"Audi alteram partem."

THE HOSPITAL INFECTION OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—The paper read on April 26th at the Royal Society of Medicine by Dr. J. E. Squire, as reported in your issue of last week, gave rise to a most interesting discussion. There was obviously not sufficient time to deal fully with all the points at issue. Owing to the short time left for discussion and the fact that the audience was composed of such distinguished physicians who evidently wished to speak, I felt diffident about taking up the time of the meeting with any remarks of my own. One point, however, seems to me of such great importance that I feel justified in asking you to allow me to refer to it in your columns. Dr. Squire's figures with regard to the number of people affected by tubercle during and after residence at the Mount Vernon Hospitals showed a higher percentage than those previously published by other observers. It was claimed that this was the result of very strict personal observation and medical examination, but Dr. Squire admitted that he had accepted for service at the hospitals persons who showed evidence of having had previous tuberculosis in a slight degree. No less eminent physicians than Dr. Theodore Williams, Dr. G. A. Heron, and Dr. Nathan Raw said they thought it unwise that persons who presented *any* evidence of having had previous tuberculosis should be accepted for posts in hospitals or sanatoria for the treatment of that disease.

Now, Sir, each of these gentlemen had previously stated that he believed the risk of infection in a well-ordered institution to be practically *nil*. Why, then, should a person with evidence of old mischief be excluded? This declaration from Dr. Nathan Raw caused me great surprise. If I have read his work correctly, a person who has had what he considers to be bovine infection is rendered to a certain extent immune against infection of the human type. This being so, it does seem illogical for him to say that a person with any evidence of old tuberculosis should not be allowed to join the staff of an institution where the risk is practically *nil*, where the utmost care is taken to prevent any carelessness, and where the hygienic conditions are as perfect as anywhere in the community.

A medical man finds himself affected with tubercle; he is told by such experts as Dr. Williams, Dr. Heron, and Dr. Raw that the risk in a well-ordered tuberculosis hospital is practically *nil*, what is more natural and reasonable than that he should apply for a post in one? Yet these same gentlemen would exclude him. Dr. Heron pointed out that "the homes of the poor were a much more likely source of infection," so presumably the affected individual must not enter general practice. Dr. Wethered believes with Dr. Squire that the risk in a general hospital is greater than in the tuberculosis hospital. Where, then, is the unfortunate man to go? I can only think of the lethal chamber.

Suppose a person presented himself to any of these gentlemen as a patient, and he was found to have early tuberculosis, he would doubtless be sent to a sanatorium for treatment, and advised to make a lengthy stay. If that environment is suitable for him, why is it so unsuitable for a resident physician who is, or has been, affected similarly? The patient would spend all his time amongst other cases presenting more or less activity; the physician with his quiescent or arrested focus only a comparatively short time.

I am acquainted with many medical men who have taken up this work because of previous infection. If a personal reference may be allowed, I am unfortunately one of the number. I have never heard of one who regretted the step, and my own experience has been exceedingly gratifying. For many years before coming to Northwood I had been fighting an uphill battle against this foe, but acting upon the advice of Dr. T. N. Kelynack, one of the honorary physicians of this institution, I applied for a post here, obtained it, and for five and a half years have had increasingly good health. Personally, I feel greatly indebted to Dr. Squire, who instead of being guided by the theories of others, has taken his own line and admitted for service those in whom there was evidence of old mischief, thus providing others and myself not only with the opportunity to do useful work, but to keep a measure of health hitherto not experienced.

I feel sure that many of your readers can give similar experience to my own.—I am, Sir, yours faithfully,

W. G. KINTON,
Medical Superintendent, Mount Vernon Hospital, Northwood.

May 9th, 1910.

A PROLONGED NASAL GAS ADMINISTRATION.

To the Editor of THE LANCET.

SIR,—As the longest case of continuous nasal administration of nitrous oxide gas I can find recorded is one of 17 minutes, I hope I may be pardoned for sending you an account of a case I have just had at the Royal Dental Hospital, London. The patient, a man, 22 years of age, came up for a dental operation on the lower jaw which proved to require more time than was expected. He was seated in a dental chair in the ordinary manner and no unusual precautions were taken. Anæsthesia was induced by the oro-nasal method and was continued by a nose-piece fitted with a valve, no oxygen (apart, of course, from that in the air) being used. The operation lasted 37 minutes and close on 100 gallons of gas were used. The patient's pulse at the wrist the instant the administration was stopped was very small and rather rapid. I regret I did not count it by the watch, but I should think it was about 90. He took rather longer to come round than usual and trembled a little. He was laid on a couch and covered with a blanket, but rapidly recovered and was soon sitting up rinsing his mouth as if he had only had a short administration, and left the hospital in the usual way in about 15 to 20 minutes. The next day he returned to have his mouth dressed and said he had had neither headache nor nausea, and, in fact, seemed to have suffered in no way from his somewhat prolonged anæsthesia.

I am, Sir, yours faithfully,

CHARLES J. LOOSELY, L.R.C.P. Lond., M.R.C.S. Eng.

New Cavendish-street, W., May 9th, 1910.

PATHOLOGICAL LATIN.

To the Editor of THE LANCET.

SIR,—One often feels regret that Latin is no longer the accepted literary medium of learned men, and nothing but admiration can be felt for the praiseworthy endeavours made in the Transactions of the Pathological Section of the Royal Society of Medicine to revive this custom. It is, however, permissible to doubt whether those foreigners who *ex hypothesi* know Latin better than English would not appreciate classical Latin as much as the dialect now employed for their benefit in this publication—whether, indeed, they might not erroneously attribute some of the peculiarities of diction found therein to ignorance of Latin grammar rather than, as no doubt they should, to a preference for some mediæval idiom. In the current number of the Transactions, for example, we find a peculiar and quite unclassical use of the preposition "cum" (together with) several times repeated—e.g., "tumoris exemplum *cum* degeneratione amyloide affecti," "cellulis magnis *cum* oleo distentis," "spherulae *cum* biliverdino tinctae"—a form of construction for which at school we should scarcely have escaped rebuke. Might we not also appeal to the learned author, for the sake of those who may, like the present writer, have but distant recollections of classical speech, to aim at rather greater simplicity of style than he always adopts? As an example of involved construction the sentence, "E lobulis constat illis vix dissimilibus hepatis ipsius" seems (if a colloquialism may be Latinised for the foreigner's benefit) "placentam capere"; while the meaning of the sentence, "Inter cellulas, autem, monstrantur ductus qui canaliculi biliares forsan repraesentant" is quite obscure, unless it is to be supposed that the printer maliciously substituted the nominative "canaliculi" for the accusative "canaliculos." Conscious of my temerity in venturing upon the above criticism, and apologising for the length of this letter.

I am, Sir, yours faithfully,

May 9th, 1910. ORBILII DISCIPULUS.

BRISTOL AND THE WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

Bristol Orthopædic Hospital.

THE thirty-third annual meeting of the supporters of the Orthopædic Hospital, Bristol, was held on April 26th at the institution, when Mr. William Garnett presided. The financial statement showed an income for 1909 of £1803 11*s.* 1*d.*, leaving an adverse balance of about £10. The sum realised by regular subscribers was only £193, a very unsatisfactory total in view of the usefulness of the work done by the hospital.

Bristol School of Industry for the Blind.

At the annual meeting of the friends of this institution held on April 25th, it was stated that the new premises now being erected on the outskirts of the city would probably be ready for occupation by the end of the year. The building at present in use has been purchased by the University, the newest additions to which stand on ground belonging to the blind school. The number of children at present being educated by the school is 99, and there are 74 adults employed in the workshops. In addition to these there are about 300 blind persons in the city under the supervision of visiting teachers, and 30 ex-pupils, under the care of sponsors, living at a distance from Bristol. It is to the city's credit that an income of £5090 is forthcoming, only £345 of which comes from the Board of Education.

Bristol Royal Hospital for Sick Children and Women.

The annual meeting of the "Ladies Auxiliary" in connexion with this institution was held on April 27th, under the presidency of the Duchess of Beaufort. The report showed that during 1909 the sum of £818 had been collected. It was stated that the late Miss Lawrence had bequeathed £500 to endow a cot in the hospital, this sum of money having been left to the Ladies Auxiliary for that purpose.

Royal Devon and Exeter Hospital.

The Exeter Amateur Operatic Society recently gave some performances of the *Yeoman of the Guard*, which, after paying necessary expenses, resulted in a sum of about £130 being raised. The committee of the society has given £100 to the Royal Devon and Exeter Hospital and £25 to the Devonshire Nursing Association. During the past four years the Exeter Amateur Operatic Society has raised £445 for the local medical charities.

The Devonshire Education Committee.

At the last meeting of the Devonshire education committee it was reported that a nurse who had been temporarily appointed in connexion with the inspection of children suffering from pediculi had received some intimidating letters, and had been forced to carry out her duties under police protection.

Pediculosis at Exeter.

At the Exeter police-court on April 28th the Exeter education authority summoned five parents for allowing their children to become infected with vermin after they had been cleansed. It was stated that the medical inspection of school children showed that several were suffering from pediculosis and that the local authority had established a cleansing station for the children and their clothing. The medical inspector and nurse had done all they could to make the parents carry out the provisions of the Education Act. The bench of magistrates were pleased that the local authorities realised their responsibilities, and added "that the law provided free education, a doctor, and the assistance of a nurse, and all the parents had to do was to find the soap and water." One of the parents, an invalid, was fined 1*s.*, and the others 2*s.* 6*d.*

The Gloucestershire Education Committee.

At the last meeting of the Gloucestershire education committee it was decided to appoint Miss Mary Deborah Hancock, L.R.C.P. & S. Edin., L.F.P.S. Glasg., as lady medical inspector at a salary of £250 per annum. It was reported that the medical inspection of school children cost at present £1700 a year, but it would probably be larger in the future.

May 10th.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Educational Treatment of Consumptives.

THE city council has approved the scheme of the health committee to make certain additions and alterations to the emergency hospital to fit it for the temporary educational treatment of consumptives. Alderman Fletcher, in presenting the report, said that the efforts towards reducing the number of cases of consumption had turned out to be one of the hardest tasks they had undertaken. Deaths from phthisis had in the past ten years averaged 750 to 800 a year—a far larger number than that of deaths due to all the other infectious diseases combined. At the Salterley Grange Sanatorium they aimed at selecting patients in the early stages of the disease and, as far as was humanly possible, effecting complete cures. Their experience at Salterley Grange had taught them several things. They found that the majority of cases examined had passed beyond the early stage before the patients realised it, and 90 per cent. had to be rejected as unsuitable. But the majority of those unsuitable for Salterley Grange could be greatly benefited by a course of such treatment as was proposed to be pursued at the emergency hospital. In some cases cures might be effected, many lives would be prolonged, and all would learn from experience the value of open-air treatment and careful regulation of their lives. They would be taught to help themselves in many ways and to guard others from infection when they returned home. With regard to the medical staff, they proposed to have a junior medical man in residence, and he would be under the superintendence of the medical officer of health; they also proposed making arrangements for the help of a local physician skilled in treatment of phthisis. No sinking fund was provided for in the scheme, consequently the cost of maintenance would be reduced, and he thought it would be demonstrated that this was the cheapest sanatorium for consumptives to be found. Councillor Dr. A. H. Carter, in seconding, referred to the amount of wages that were lost through consumption. During 1909 there were 757 deaths. One of the largest friendly societies calculated that on the average they had to pay out 58 weeks' out-of-work pay to every patient that died. It was also calculated that amongst the fatal cases from consumption 82 per cent. occurred amongst wage-earning adults. Assuming the average wage to be 10*s.* a week, that represented nearly £18,000 lost in wages to Birmingham. He considered that £2500 annual expenditure was not much compared with the saving of a large proportion of the amount lost in wages, which was only one of the many losses that could be pointed out.

The University.

Mr. C. L. Boulenger, M.A., King's College, Cambridge, has been appointed lecturer in zoology as successor to Mr. Leonard Doncaster, M.A. Dr. Leonard G. Parsons has been appointed assistant lecturer in pathology and bacteriology to succeed Dr. Leonard Mackey. Mr. P. P. Cole, M.B., Ch.B. Birm., F.R.C.S. Eng., has resigned his post as senior demonstrator in anatomy.

May 10th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Fight Against Tuberculosis.

THE Manchester and Salford District Charity Organisation Society is opening a special consumption fund, relief from which will be confined to the sufferers from phthisis. In the special appeal it is stated that families where the bread-winner is not only too ill to work but is a source of extreme danger to his family are among the most distressing cases with which the society deals. It is hoped through this fund to maintain the strength of a number of patients waiting for hospital treatment, and also to protect the children who may through want be in added danger of contracting the disease. The work will be done in close union with existing efforts and no help will be given in any case which has not been visited by the sanitary officers and approved by the health

departments of Manchester and Salford. So far the response is encouraging. But the coöperation of the class among the public which suffers most is still urgently required here. Spitting in public is indulged in by a very large proportion of the less civilised sections of our people. The disgusting habit has compelled the tramways department to take vigorous action. Numerous complaints have been received, and to check the evil inspectors have now been placed on the cars to take the names of offenders. At the Manchester police-court on May 6th many summonses were heard, and five defendants were each fined 21*s.* and costs.

Mersey and Irwell Committee.

At a meeting of the Mersey and Irwell joint committee held on May 4th under the chairmanship of Dr. Hewitt, it was stated that the estimate for the year ending March 31st next was £4368. One half is to be levied at once and the other half next October. The clerk was directed to call the attention of the unfortunate Salford corporation to the fact that the effluent from the Salford sewage works was the worst on the month's list. The corporation is also to be informed that unless it takes steps to improve the treatment of the sewage the matter will be again brought before the court and the infliction of penalties will be asked for. Salford may be sympathised with, as it is a difficult and costly task she has to undertake, but it must be accomplished. At the same time, all the authorities higher up the Irwell and its tributaries must be similarly treated, as she ought not to be asked to deal with the filth that comes down to her from the streams above.

May 10th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Edinburgh University: Medical Curriculum.

As has been indicated in THE LANCET from time to time, there has been much dissatisfaction amongst the lecturers in the Edinburgh Medical School with the curriculum. This found expression in the report approved by the Edinburgh Pathological Club, which was summarised in THE LANCET. It found further expression at the meeting of the General Council of the University held on Oct. 29th, 1909, when it was remitted to the Business Committee "to consider and report as to the desirability of procuring by an amending ordinance of the University Court or otherwise further improvements in the medical curriculum and examinations." In view of the remit the Business Committee appointed a special committee to consider the question of medical education in Edinburgh. This special committee was of opinion that the questions could be best treated under two main heads: (1) the medical curriculum regarded purely as a course of study; and (2) the mutual relations between the bodies concerned in medical education in Edinburgh—viz., the University, the extramural school, and the Royal Infirmary. With this double object in view the special committee was divided into two subcommittees. The subcommittee whose duty it was to report on the medical curriculum drew up a report which was accepted by the Business Committee. This report was submitted to the meeting of the General Council at its statutory meeting on May 4th. It approved the report and directed that it be sent to the University Court. The report of the second subcommittee has not been submitted—in fact, it has yet to deal with the questions on which it has to report. An outline of the suggested changes in the curriculum is of sufficient interest to be summarised here. The committee is of opinion that it is advantageous to the student to begin the curriculum in May instead of in November, but does not press the point. With regard to the subjects of the first professional examination—botany, zoology, chemistry, and physics—it is suggested that instruction in these subjects ought to be accepted from any school or college approved by the University Court and attended prior to registration, and that students from such institutions should be admitted to examination in one or more of these subjects without attendance at the University class on the subject. The passing of these subjects would not be held to constitute any part of the five years' course of professional study. The time table incorporated in the committee's report begins with the *first winter;* in it the student attends 100 lectures on both anatomy and chemistry and 40 lectures on physics; practical chemistry gets 80 hours, practical physics 30 hours, and tutorial anatomy 40 hours. The afternoons provide two or three hours daily for practical anatomy. At the end of the winter the examinations in chemistry and physics ought to be passed. In the summer botany lectures are given 50 hours, zoology lectures 40 hours, and 50 hours each to practical botany and practical zoology; the afternoon is reserved for practical anatomy. At the end of the session the examinations in botany and zoology ought to be passed. In the *second winter* anatomy demonstrations have 100 hours, physiology lectures and demonstrations 100 hours, practical physiology 80 hours (two hours two days a week to sections of the class), and practical anatomy 120 hours in the forenoons and two or three hours each afternoon. In the summer practical histology, first division, two hours four days a week, and second division two hours four days a week at different hours; anatomy demonstrations have 50 hours; and practical anatomy has two to three hours every afternoon. The examinations in anatomy and physiology should be passed in July. The *third year* includes the winter and the following summer, so that the period includes 150 academic days, or 30 weeks; surgery lectures have an hour three days a week, pathology lectures three days a week, materia medica two days a week, and practical pathology and bacteriology 60 to 70 hours. Hospital work on the surgical side, including post-mortem examinations, is begun and extends from 10 A.M. to 1.30 P.M. daily. In July there is an examination in elementary pathology and materia medica (including pharmacology). The *fourth and fifth years* are devoted to medicine, surgery, obstetrics, gynæcology, and special subjects. The most important changes are that systematic lectures on medicine and surgery are given on alternate days, so that there are 90 hours for each (Saturday morning being utilised). Therapeutics have 40 hours given in two days a week, and advanced pathology has 20 lectures allocated to it. Obstetrics have 60 lectures, and gynæcology has 30. In the fifth winter there are 30 lectures on advanced surgery, and 60 on advanced medicine, while operative surgery has 60 hours. Clinical medicine, surgery and gynæcology, extend from 10 A.M. to 1.30 P.M. daily. The changes proposed would add practical instruction to theoretical in physics; the second professional examination in anatomy and physiology would be taken at the end of the second year of study; the third year is given to pathology and materia medica, and the student begins hospital work and the study of surgery; the fourth and fifth years are devoted to medicine, surgery, obstetrics, gynæcology, public health, medical jurisprudence, and special subjects, as fevers, insanity, &c. In addition, a short course of lectures on therapeutics and another on advanced pathology have been introduced. The report recommends the adoption of a regulation to the effect that attendance on any of the subjects of the third and final examinations shall not be allowed to count until both subjects of the second professional have been passed.

Outbreak of Scarlet Fever at Alyth.

There have been 50 cases of scarlet fever in about three weeks in Alyth, and suspicion has been directed towards a dairy of 17 cows outside the burgh boundary, which disposes of most of its milk within Alyth burgh. Official inspection of cows led to a divided opinion, and it was decided to seek the opinion of the Local Government Board. Therewith the county officials, members of the district committee, and members of the Alyth local authority met two Local Government Board officials on May 7th, and it is understood that the county officers instructed the closing of the dairy for ten days pending inquiries. The dairy in question is one of the cleanest and best kept in Perthshire, and there has been no case of fever amongst those in any way connected with it.

Medical Officer's Report for Ross and Cromarty.

Dr. Bruce of Dingwall, in submitting his nineteenth annual report of the public health of the county of Ross and Cromarty for 1909, states that the general health, judged by the death-rate, continues to improve, the mortality figure being 13·938 per 1000, as against 15·426 for 1908 and 15·870 for 1907. He continues: "In the different districts of the county the highest mortality-rate occurred in the south-western district and the lowest in Lewis. As I have remarked in previous reports, if the returns were corrected

by the mortality at different ages, the figure, more especially in the western and south-western districts, would be reduced in their case by at least 2, if we are to institute a fair comparison with the Lewis district, for example. In the former, as shown by the low birth-rate, the proportion of young and middle-aged is much less than in the latter, on account chiefly of the steady emigration of the working classes to America, Australia, and the colonies generally. From the Lewis, on the other hand, there is comparatively little outflow of population. Again, looking at this question from another point of view, in the south-western district two-thirds of the deaths recorded were of persons over 60 years of age, while in the Lewis only half had reached that age, while the conditions of life are much the same in both districts. The inference is fair, that in the one case there was a much larger infusion of young lives than in the other, with a correspondingly diminished number of deaths to be recorded. Passing to the birth-rates, the general rate all over the county is 20·213, as against 21·575 in 1908. In the insulo-rural districts the rate is 19·1, and in all Scotland 26·3." With regard to the need for medical inspection of schools, Dr. Bruce writes: "In a part of the country such as Ross-shire, where the natural conditions are such as favour the public health, there are few influences prevailing which are calculated to have an openly injurious effect; and consequently, measures for their improvement are in many respects uncalled for. One of the most real advances in combating disease is a better knowledge of the laws of health. Hence I have continued to advocate teaching and practical training in hygiene in our public schools. With the advent of the medical inspector there is sure to follow large improvement in this respect. It cannot be expected that old folks will change their ways, however strongly reforms may be urged upon their notice, and I do not believe it advisable to push compulsion too soon or too far. The people must, in my view, be educated first to understand the necessity for ultimate resort to the law in certain cases before trying to enforce it. Much has been said, for example, as to the filthy and squalid state of many of the houses of our Highland fishing and crofting populations. No doubt, æsthetically, such accusations on this ground are well founded. But when brought to the test of hard statistics the fact remains that in such habitations there exist, on the whole, more than healthy men and women."

Death of an Aberdeen Medical Man in Ceylon.

Information has been received in Aberdeen of the death of Dr. James Craib, at the age of 57 years, youngest son of Mr. John Craib, Strathmore, Coull. Dr. Craib was educated at the University of Aberdeen, where he had completed his curriculum as a medical man by the time he was 21 years of age. Shortly after he went to Ceylon, where he has carried on his profession successfully ever since, passing through several grades of the Government service till he reached the position of medical officer in charge of a province. His wife died some years ago, but he is survived by a grown-up family. Dr. Craib was a keen sportsman and extremely popular with those with whom his work brought him in contact.

May 10th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Statistics of Venereal Diseases in Germany.

AT a recent meeting of the Society for Social Medicine Dr. Blaschko read a paper on the prevalence and distribution of venereal diseases in Germany. He said that reliable statistics on this subject were difficult to obtain except with regard to the army. It has been found that venereal diseases are less frequent in the German army than in any other European army. In the German army these diseases have shown a steady and progressive decrease during the last 20 years, and are in the various garrison towns less frequent among the soldiers than among the civilian population. In a collective investigation carried out on behalf of the medical department of the Prussian Government 41,000 venereal patients were registered, of whom 11,000 were syphilitic. Obviously this number is much too small, and it has to be further remarked that only a fraction of the medical profession answered the questions of the Government schedule. From the statistics of the collective investigation it appeared that the proportion of persons under medical treatment for venereal disease per 10,000 of the urban population was as follows: in Berlin, 142 men and 45 women; in cities of more than 100,000 inhabitants, 100 men and 28 women; in towns having from 30,000 to 100,000 inhabitants, 58 men and 17 women; in towns of less than 30,000 inhabitants, 45 men and 17 women; and among the general rural population, 7·95 men and 2·7 women. In the army the proportion of venereal patients was 15 per 10,000. Classifying the cases as between town and country, 78·5 per cent. of all the patients belonged to the urban and 21·5 per cent. to the rural population; whilst in Prussia, on the contrary, 76·5 per cent. lived in the country and 23·8 per cent. in towns. In Prussia 28·2 men and 9·0 women per 10,000 of the whole population were under medical care for venereal diseases. Of the patients 54 per cent. suffered from gonorrhœa, 7 per cent. from soft chancre, and 39 per cent. from syphilis. The latter number is obviously too high, the overstatement being caused by the fact that the duration of treatment is greater for syphilis than for gonorrhœa, and that therefore a greater number must be registered on a certain day. In fact, only 10 per cent. of fresh cases may occur within a year. Dr. Blaschko had collected statistics from sick clubs, in which certain trades or professions preponderated; he found that in a club consisting largely of clerks the proportion of members suffering from venereal disease was 16 per cent.; in a workmen's club it was 4 per cent.; and in both clubs of the students of the Agricultural and of the Veterinary College it reached the high number of 25 per cent. It was an interesting fact that in Southern Germany the amount of venereal disease is smaller, but the number of illegitimate children greater than in Prussia. In the colliery and mining districts of Rhenish Westphalia the number of venereal cases is very small; this is due to the circumstance that the working population, which is predominant in that district, marries at a rather early age and is therefore less exposed to infection; in that part of the country there is also less prostitution than in the great commercial towns and seaports, in the garrisons and university towns, and in places with many foreign visitors. Dr. Blaschko declared himself unable to explain the differences between the number of venereal cases in Northern and in Southern Germany, the disparity being obvious at the examination of army recruits. The proportion of venereal cases per 1000 recruits coming from various cities and constituent States of the Empire was as follows: Berlin, 41; Altona, 31; Kiel, 25; Nuremberg, 12; Metz, 8; Prussia, 7·8; Saxony, 13·5; Bavaria, 4·8; Würtemberg, 3·3; and Baden, 2·5. Venereal diseases are obviously on the increase; this is especially shown by the number of patients suffering from general paralysis admitted into the Prussian lunatic asylums; these patients during the period 1888–90 consisted of 995 men and 222 women, whilst during the year 1908 the number rose to 2279 men and 660 women.

May 10th.

CHILD-STUDY SOCIETY.—The annual conference of the Child-Study Society, consisting of constituent societies at Birmingham, Cheltenham, Dundee, Edinburgh, Exeter, Halifax, London, Liverpool, Manchester, and West Kent, will be held at Tunbridge Wells on May 19th, 20th, and 21st in the Town Hall. The presidential address will be delivered by Sir James Crichton-Browne on Thursday, May 19th, at 9 P.M. On May 20th three addresses will be given, at 11 A.M., 3 P.M., and 8 P.M. respectively, the subjects being: The Social Life of a Child at a Co-Educational School, by Mr. John Russell, headmaster of King Alfred School, Hampstead; The Child as Citizen, by Mrs. Higgs, author of "Glimpses into the Abyss"; The Hand as the Gate of Knowledge and Social Relationship, by the Hon. Sir John A. Cockburn, K.C.M.G. On May 21st an address will be given by Miss Alice Ravenhill, at 11 A.M., on the Result of an Investigation into the Play Interests of English Children, based on a Preliminary Examination of 10,000 Returns. Mr. C. Lowry, The School House, Tonbridge, will invite the delegates to lunch on Saturday. The meetings on Friday and Saturday (except the council meeting) are open to the public.

The Death of the King.

WE have received from the late King's physicians the following authorised report of the last illness of His Majesty:—

The brief illness of the King and its rapid and fatal termination can only be understood after reference to his physical condition as a whole, when the sequence of events becomes clear.

His Majesty had for some years suffered from emphysema with an attendant bronchial catarrh, the signs of which were permanently present at the bases of the lungs. On several occasions digestive disturbances and other symptoms had caused his medical attendants to realise that His Majesty no longer had the reserve of constitutional power which stood him in such splendid stead after his serious operation in 1902, and that any intercurrent catarrhal or bronchitic attack of a severe kind would at once call upon both heart and lungs for their fullest effort. It must here be said that those around him knew how earnestly concerned he was at the present strained position of political affairs, and this fact should not be lost sight of in an all-round consideration of the King's health.

On March 7th, it will be remembered, His Majesty started for Biarritz to obtain a little leisure from these anxieties. He had received some months previously a vaccination treatment which it was hoped would secure him for some time from catarrhal attacks. He broke the journey in Paris, and on the first night there had a severe attack of acute indigestion with subsequent dyspnœa and considerable cardiac distress. The symptoms had arisen out of exertion, and yielded promptly to treatment. The next day His Majesty exchanged visits with President Fallières and fulfilled his ordinary social engagements. But on arrival at Biarritz it became clear that he had contracted a chill which developed into a regular bronchitic attack, the raised temperature, accelerated pulse and respirations, and the physical signs in the chest occasioning his physician no little anxiety. The attack lasted 10 days, during several of which he was confined to his bed, but the symptoms passed off, and for the rest of the visit His Majesty led his usual life, making excursions, and entertaining quietly.

His Majesty came back from Biarritz on Wednesday, April 27th, better in every way, and at once took up the thread of his very full life. On Saturday, April 30th, he went down to Sandringham feeling a little unwell, and on Sunday, after attending service, he spent a long day looking at some extensive new planting and gardening alterations, with the result that a fresh chill was contracted. On Monday, May 2nd, he returned to London in very cold weather, feeling somewhat chilly and out of sorts. He, however, fulfilled a social engagement to dinner. That evening, on returning from dinner, His Majesty was seen by one of his physicians, who found him complaining of some dyspnœa, with slightly raised temperature and quickened pulse and respirations; distinct bronchial crepitations were present over the bases of both lungs. He passed a disturbed night. On Tuesday morning, May 3rd, the symptoms had abated, he felt better, and the temperature was normal, but he suffered from much cough and expectoration and considerable dyspnœa. Notwithstanding the urgent desire of his physicians that he should rest quietly, His Majesty again received official visitors and gave audiences. That evening at 7 P.M. the King told his physicians that he felt ill, and he had more than one attack of severe dyspnœa during that night, the attacks not being occasioned, as hitherto, by exertion. On the morning of Wednesday, May 4th, the temperature was 99° F. and the pulse 90, and he complained of irritation in the throat. He was seen by the throat specialist who had seen him on former occasions, but the only condition found was catarrh, and there was now an irritable and catarrhal condition also observable in connexion with other organs. His Majesty again, however, gave several important audiences. At 6.15 P.M. a consultation was held by his three physicians who found that the two consecutive bad nights and some severe attacks of dyspnœa had told seriously upon His Majesty. There was a very imperfect entry of air at both bases, and much fine bronchial crepitation; the right side of the heart was embarrassed. The temperature was normal and the respirations 34. One of his physicians remained at the Palace, and the King passed a disturbed night. On Thursday morning, May 5th, His Majesty's condition was not improved; he again, however, gave audiences. The attacks of dyspnœa were more frequent and distressing, and with increasing cyanosis were gravely suggestive of threatened cardiac failure. In the afternoon the Queen arrived from the Continent, and the fact that the King was not at the station to meet her was the first indication to the public that His Majesty was indisposed. With the permission of the King the physicians now issued their first bulletin that "The King is suffering from bronchitis and has been confined to his room for two days. His Majesty's condition causes some anxiety," which appeared in some of the evening papers, but not until it had been seen by His Majesty, who somewhat modified its terms. Sir Francis Laking and Sir James Reid remained at the Palace. Up to 4.30 A.M. on Friday morning His Majesty had a better night, but in the early hours of Friday he had several severe attacks of dyspnœa, and when visited that morning by his physicians it was at once seen that the gravity of the symptoms had increased. A bulletin was issued stating, "The King has passed a comparatively quiet night, but the symptoms have not improved and His Majesty's condition gives rise to grave anxiety." Thereafter His Majesty's condition grew rapidly worse. He had more than one attack of dyspnœa of a dangerous character following upon slight movements, from which he was only rallied by powerful remedies. About 3 P.M. consciousness began to fail, and the third bulletin was issued stating "The King's symptoms have become worse during the day, and His Majesty's condition is now critical." Consciousness never completely returned. The end came at 11.45 P.M., after a prolonged period of perfect calm.

FRANCIS HENRY LAKING, M.D.
JAMES REID, M.D.
R. DOUGLAS POWELL, M.D.

KING EDWARD VII.

(From a photograph by Stuart, Richmond, Surrey.)

A BRIEF BIOGRAPHICAL SKETCH.

No extended biographical notice of his late Majesty will be expected from us, but a brief record of his life, laying stress on the particular places where he entered intimately into medical affairs, should be given.

King Edward VII. was born on Nov. 9th, 1841, at Buckingham Palace, where, on May 6th, 1910, he died, having reigned over the British Empire for a little more than nine years. The eldest son of Queen Victoria, though not her eldest child, his birth was acclaimed with great rejoicing by his mother's subjects. The importance of his early training for the high position to which in the course of nature he should succeed was the subject of profound solicitude to his parents. The Prince Consort, his father, was well fitted for the task of taking counsel with the Queen in such a matter, while the views of his friend and adviser Baron Stockmar undoubtedly had great weight with both parents. As a result the Prince passed through the various stages of preparation under governesses and tutors; went, without, however, enjoying the full advantages of university life, to Oxford and to Cambridge; travelled and received an education calculated to broaden his mind, to inculcate the precepts and information then deemed suitable for the young, and to afford detailed as well as general knowledge of his future subjects, their lives, their interests, and their aspirations. The records left by his parents and his instructors contain proof of the intelligent and lovable disposition which he evinced in these early years. Among the university professors whose names are associated with the educational guidance of the future Sovereign may be mentioned Max Müller, Goldwin Smith, and Charles Kingsley, and it may be added that during a period of several months spent at Edinburgh he had the advantage of being introduced to the study of natural philosophy by Dr. Lyon Playfair (afterwards Lord Playfair), when, no doubt, there was awakened in his mind that interest in scientific progress and that power of grasping and appreciating its import which he exhibited in so perceptible a degree throughout his life. Military training, and the studies of history, ancient and modern, and of modern languages, were not forgotten, the last forming no unimportant part of the equipment of a Prince who throughout his life was to know men of all nations, meeting them in their own countries, and receiving them with cordial hospitality in his own.

His early travels included a visit to Ireland with his parents in 1849; two tours on the continent as well as walking tours with tutors; and in 1860 he made his first voyage of importance, proceeding to Canada, where he laid the foundation-stone of the Dominion Houses of Parliament, and where the memory of a shy, pleasant boy, who was extraordinarily easy to amuse, still lingers. But the time for entry more definitely into public life was upon him. In 1861 the Prince Consort died from typhoid fever, and the effect of his death upon the public life of the widowed Queen is a matter of history. This tragedy deprived a family of nine children of the guidance which, had their father survived, would no doubt have had a powerful influence upon their early development; also, by causing the Queen to lead for many years a life which, so far as social and public functions were concerned, was one of seclusion, there was cast upon the young Prince of Wales the duty of representing royalty in England both in society and in the eyes of the bulk of his mother's subjects. During the year of mourning for his father he made a journey to Egypt and the Holy Land accompanied by Dr. A. P. Stanley (afterwards the famous Dean of Westminster), to whom the Queen's attention had been drawn by his book "Sinai and Palestine." Upon their return, having come of age, the Prince of Wales took his seat in the House of Lords, following closely upon which came that event of supreme importance in his life—his engagement to the beautiful Danish Princess. In 1862 a marriage was arranged between the Prince of Wales and the Princess Alexandra, daughter of King Christian IX. of Denmark, and the wedding took place on March 10th in the following year. It was a union welcomed by the British nation for racial and political reasons, and the grace and charms of the bride won for her from the first a place in the warm hearts of the people at large. That place she has never for a moment lost either as Princess or as Queen, and it is difficult to estimate to how great an extent the personal affection of his subjects for the late monarch was due to and was strengthened by his association in their minds with his wife, with the upbringing of the family which she bore him, and with the performance with her at his side of those social and public functions which ever gained distinction by her presence. From this point his life has been lived so entirely in the light of day that no summary of a historical career need be attempted. At home and abroad, at the Court and in the country, sitting on Royal Commissions, mingling with his future subjects at their sports, and testifying on public occasions to the merits of all useful movements, the Prince of Wales became known in a singularly personal manner to all his subjects. Thousands upon thousands had heard him speaking upon the social progress of the empire at different functions, and always what he said came home as the expression of a fine and well-balanced intelligence and of a broad and sympathetic humanity. He was well understood by his people; and when in 1874–75 he made his long and interesting tour through India the same social wisdom and personal qualities made his journey a prolonged diplomatic triumph. We may add that on that journey through a tropical country, amidst fatiguing ceremonials and visits in which pleasure was combined with arduous public duty, the health of the Heir Apparent was naturally a matter of considerable solicitude to his medical attendant. This fact was duly perceived by the Prince of Wales, and formed one of the reasons for his deep interest in medicine.

In recording the life of Queen Victoria[1] we stated that that great ruler was always a good friend to medicine. The same may be said of her son, the late King, and with emphasis, because of the addition that as a man having great capacity for work and activity of mind and body he was ever able to give strong practical

[1] THE LANCET, Jan. 26th, 1901, p. 279.

assistance where it was needed and when his sympathy was genuinely roused. In particular was he interested in the promotion of everything that might tend to bring the best aid of medicine and surgery within the reach of all, and in the wide employment of any scientific development which might mitigate or, haply, prevent the spread of dangerous disease. For his sympathy with, and his interest in, the work done by the physician and the surgeon he had some personal cause. In the autumn of 1872 he contracted typhoid fever while paying a visit at a nobleman's country seat, and it may be added that two others there present, Lord Chesterfield and a groom, were similarly affected and died. Those who are middle-aged among his subjects will remember the illness of the Prince, the deep anxiety of the nation, the watch at his bedside throughout the kingdom, the constant issue of the eagerly read bulletins which made familiar to high and low the names of Jenner, Gull, and Lowe. Then came the growing feeling of relief from tension when more favourable symptoms were announced, and then the joy when convalescence followed, culminating in a great day of national thanksgiving. 20 years later the Prince and Princess of Wales saw their second son George, now our King, struck down with the same disease that had so nearly cost his father his life, and watched him recover, though fortunately with no reason for the same anxious alarm, but almost immediately afterwards their elder son, the Duke of Clarence, was taken from them and the nation as the result of an attack of influenza. Truly, it may be said that his late Majesty's familiarity with practical medicine, its accomplishments and its limitations, was very close. It was therefore in no way to be wondered at that in his sympathy with the subjects over whom he ruled the King was ever ready to keep himself in touch with all that was being devised and done to retard the incidence of that death which must come to all; and that in particular he should have taken a keen interest throughout his life in the provision by voluntary charity of that aid in sickness which otherwise would be beyond the reach of the humbler classes of the population. King Edward's Hospital Fund, initiated by him as Prince of Wales in 1897 in commemoration of Queen Victoria's Diamond Jubilee, is a conspicuous monument, reared to remind us of his sympathy with and interest in the work of the hospitals, and of his practical sagacity and businesslike power of anticipating results.

And medicine was again to play an important part in his life. On Jan. 22nd, 1901, by the death of Queen Victoria, King Edward VII. became King, but before the rite of coronation could enable him to formally ascend the throne of his ancestors he had to incur once more a debt to science. His coronation was fixed for June 26th, 1902, and at midday on June 25th London, bathed in summer sunshine, was busy decking itself for the coming pageant which was to be followed on the 27th by a prolonged progress of their newly-crowned majesties through the streets. What followed none who witnessed it will forget. The astonishing announcement that at the last hour the coronation was indefinitely postponed owing to the King's illness was immediately succeeded by the news that an operation had already been performed, of the seriousness of which in the circumstances medical men and most laymen were fully aware. A few days later, however, the bonfires prepared to signalise the coronation were lit in token of joy that the King was out of danger. He showed great recuperative powers, and, as all remember, he was able to bear the fatigue of his coronation on August 9th. He had succeeded to the throne when the long war in South Africa was dragging to its close, taking its toll from all ranks of his army and putting a severe strain upon his country's resources. The war ended just before the date first fixed for the coronation of King Edward and Queen Alexandra, and Lord Kitchener, the general who had conducted it in its later stages, was not the least conspicuous figure in the procession on the day of the actual ceremony. From that time onwards his late Majesty's reign was one of peace, and it has been reckoned to be due to him in no small measure that during that period the peace of Europe has been preserved unbroken. The full extent of the influence which he exercised has yet to be ascertained and appreciated, but of its beneficent tendency there can be no question any more than of the conspicuous ability which he evinced as King in the performance of functions of Statecraft which he was not called on to exercise while his mother lived.

Among the most distinct occasions on which the King manifested in a practical manner the interest which he felt in the progress of medicine may be mentioned the following. In 1874 he presided at the Eighteenth Festival Dinner of Epsom College, having been present in 1855 when his father, the Prince Consort, declared the building open. In 1895 he laid the foundation stone of the lower school at the College. In 1891 he accepted the presidency of the Congress of Hygiene and Demography which met that year in England. In 1896 the financial position of Guy's Hospital was brought to his attention. He presided at a dinner of gentlemen met together to support the charity, and by actions and words brought to the hospital a measure of instant relief that could have been obtained in no other way. He laid the foundation-stones of many of our great medical charities both in London and the provinces, and accepted the Fellowship from the Royal College of Physicians of London in 1897, and from the Royal College of Surgeons of England in 1900. He honoured with his friendship many members of the medical profession, and on those occasions when he was under their care his attention to the relations that must prevail between patient and doctor was scrupulous. Medicine has lost in King Edward VII. a true friend.

During his whole life as Prince of Wales and as King he was a keen sportsman, devoting himself in particular to shooting and to racing, but taking also a lively interest in yachting. His successes on the turf before and after his accession to the throne were a source of satisfaction to a large class of his subjects, many of whom forgot that the King pursued amusement with characteristic zeal and heartiness in the intervals of enormously hard work on behalf of his country. To this sort of misconstruction he was often the victim. Many saw the motive of amusement only in those visits abroad for the sake of rest which he paid during recent years in the spring season. From such a visit to Biarritz he had returned but a few days before his last illness, and, as will be seen by the authorised statement of the course of events in that illness, the change of air and environment had brought much benefit, though Biarritz this year has had a most rigorous spring. But a visit to Sandringham on the Saturday and Sunday before his death brought back bronchitic symptoms, which had shown themselves while he was on his holiday. On the afternoon of Thursday, May 5th, a few people in London learnt with concern that the King was suffering from bronchitis. On the following morning all were aware with a shock of horror that his medical attendants were finding his condition one causing anxiety. The public was compelled to recognise the full import of the more serious bulletins issued during Friday, and knew on the morning of Saturday, May 7th, that just before midnight the King had breathed his last. He died literally in harness, transacting business and granting audiences up to the day of his death. It was characteristic of him that he should die in this way, for throughout the whole of his life he had refused to allow the plea of sickness to

stand between him and the performance of his duties. The general condition of his health, as revealed in his physicians' statement, shows that the train of events and their sad culmination could be no matters of surprise for those in his nearest confidence; while the revision by the patient of the first bulletin issued proves the spirit with which he faced the increasing gravity of the symptoms. We allow ourselves to make one comment on the authoritative statement of His Majesty's illness. The last audiences alluded to were of the briefest possible description and entailed no fatigue upon the King. Sir Francis Laking, Sir James Reid, Sir R. Douglas Powell, Dr. Bertrand Dawson, and Dr. StClair Thomson did all that was possible for him in the circumstances, but it is abundantly clear that the reserves of vitality could not stand the strain put upon them.

The tragedy of the rapid close to his great career has been even more vividly brought to all minds by the moving message of the Queen-Mother to his sorrowing people.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Plague.

THE statement of plague mortality for the week ending April 2nd shows a rise of 2962 in the number of deaths recorded throughout India, the totals being 22,198 for the previous week and 25,160 for the week under report. In the provinces the deaths occurred as follows: Bombay Presidency, 687; Bengal, 3021; the United Provinces, 9139; the Punjab, 8655; Burma, 582; the Central Provinces, 915; Rajputana, 2012. In the United Provinces the worst areas were Muttra, 1261; Ballia district, 1173; Unao district, 679; Azamgarh district, 759.

The Rise in Indian Opium.

The reason generally given for the phenomenal rise in the price of Indian opium in China is that inveterate users of the drug are laying in stocks to last them during the term of their natural lives! These are men of a certain age who are not prepared to forego the pleasures of the pipe in spite of all the edicts from Peking. They are therefore purchasing largely now, and as the supply from India has been curtailed prices are mounting up every week. In fact, Indian opium in China now fetches its weight in silver. It is the Malwa variety which most appeals to smokers, and as it improves with age fancy prices are paid for it. Malwa opium 15 or 16 years old is to the Chinese connoisseur what a vintage port is to the European wine-drinker. The Bengal drug, on the other hand, does not keep its flavour more than a few years after it has been put on the market, but it has to be purchased now as the Malwa sales in India have been anticipated by a year and no shipments will be made from Bombay in 1910–11. Looking at the position in China, it is plain that the cultivation of the indigenous drug has really been checked and that local production is growing smaller every year. But Szechuen, the province with the largest area under poppy, has not yet obeyed the Imperial mandate, though its neighbour Yunnan has loyally conformed to the Peking orders. Much depends upon the personal character of the various viceroys, who have full power to stop cultivation. In Szechuen the highest officials are said to be deeply interested in opium, and the present viceroy is not inclined to move seriously in the matter of prohibition. He has, to a certain extent, popular opinion on his side, as the cultivation of opium is general and money flows into the province during the export season. The Central Government is not apparently prepared at present to interfere with this lucrative business, and the reformers of the Young China party cannot coerce the viceroy, who is admittedly a strong provincial ruler.

The Proposed New Hospital for Mussooree.

An appeal has been issued by Major G. T. Birdwood, I.M.S., civil surgeon of Mussooree, on behalf of a new cottage hospital, as the present one is considered to be too small and too far out of the way for the needs of Mussooree, but Rs.50,000 is a big sum to collect, especially when one bears in mind the somewhat numerous other charitable institutions Mussooree supports. Nevertheless, a hospital such as is proposed at Bassett Hall on the Camel's Back is not a merely local institution. It appeals to, and deserves support from, the whole of the Upper Provinces, for there is only the Ramsay Hospital at Naini Tal available at present. It should be clearly borne in mind that the cottage hospital does not in any way interfere with existing nursing homes, but is intended for those who cannot afford the fees charged at these homes, which have, of necessity, to be *paying* concerns.

A School of Tropical Medicine for Calcutta.

Lieutenant-Colonel P. Hehir, I.M.S., senior medical officer at Lansdowne, states in the *Allahabad Pioneer* that there is no country in the world in which a School of Tropical Medicine is more urgently called for than in India, or in which a greater number of people would be benefited by the establishment of such an institution. Calcutta is the place in the Indian Empire which offers unrivalled and almost unlimited facilities for scientific education in tropical medicine. Having visited practically every School of Tropical Medicine in the Old and the New World, Colonel Hehir is in a position to state that "in no other place is such a variety of tropical diseases to be met with as in Calcutta, in which city instances of over one-half of the diseases peculiar to the tropics are to be found." Further, its connexion with the East generally, its immense shipping trade, brings from different ports cases of several forms of tropical disease not indigenous to India. In the Medical College and Medical College Hospital of Calcutta there is ready at hand a pathological museum rich in its collection of specimens illustrating the effects of tropical disease, which specimens have been gathered since the opening of the Medical College somewhere about 1880. The proximity of the Calcutta museum, with its entomological and other collections intimately associated with the scientific study of tropical medicine, is an additional reason for the selection of the metropolis for the School of Tropical Medicine. The new institution should afford every facility to its students to acquire a thoroughly sound and practical training in tropical medicine and all its branches, and of obtaining a degree or diploma in tropical medicine after going through the complete curriculum of studies and work. Such a degree or diploma could be readily included by the Calcutta University in the list of qualifications which it grants.

April 16th.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the First Professional Examination for the Licence in Dental Surgery held this month, the following candidates were approved in the under-mentioned subjects. The list includes the name of one lady, Miss Lily Fanny Pain:—

Mechanical Dentistry and Dental Metallurgy.—Eric Bernard Armitage, Royal Dental Hospital; Norman Arthur Austin, Birmingham University; David Harold Barr, Guy's Hospital; Reginald Hugh Basker, Bristol University; Sydney William Bevis and John Edgar Davies, Guy's Hospital; Thomas Clement Davies, Royal Dental Hospital; Robert Lester Donn, Guy's Hospital; Percy William Flook, Bristol University; Eldred Leslie Fraser, Guy's Hospital; George Cowley Gell, Royal Dental Hospital; John Wesley Gilbert, Bristol University; Victor FitzHerbert Hedworth Golledge, Guy's Hospital; Owen Hairsine, Royal Dental Hospital; Edwin Joseph Handford, Bristol University; Samuel George Howle, Birmingham University; Alfred Morgan Hughes, William Sanders Johnstone, Thomas Clatworthy Kidner, and Aurelius Percy Kincaid-Smith, Royal Dental Hospital; Bernard Lethaby-Morgan, Bristol University; Frank Lodge and Ewart McArd, Royal Dental Hospital; George Matthews and Charles Harold Medlock, Guy's Hospital; Herbert Vincent Morley, Royal Dental Hospital; Charles Douglas Neale and Raul Orozco-Casorla, Guy's Hospital; Lily Fanny Pain, National Dental Hospital; Thomas Harold Parsons, Birmingham University; William Linnell Partridge, Guy's Hospital; Herbert James Pegler, Royal Dental Hospital; Harold Neish Purdom, Guy's Hospital; William Edwin Acland Sampson, National Dental Hospital; Isidore Gittleson Samuels, Guy's Hospital; Frederick John Smith, Sheffield University; Claude Hamilton Stainer, Reginald Douglas Tanner, Francis Joseph Tipper, and Reginald McKenzie Veale, Guy's Hospital; Harold Walker, Manchester University; Frank Roland Wallis, Guy's Hospital; Harold Wardill, Royal Dental Hospital; William Henry Whitworth, Manchester University; Edgar Roskelly Williams, Guy's Hospital; Malcolm Lloyd Williams, Birmingham University; Charles Henry Wilson, Bristol University; and Lewis William Wilson, Royal Dental Hospital.

Mechanical Dentistry.—Henry Kiver Allison and Horace Arthur

Arkill, Royal Dental Hospital; Henry Leonard Bailey, Guy's Hospital; Fritz Ernest Bendix, John William Bowen, Francis Edward Stuart Brailsford, and Montague Kempston Butler, Royal Dental Hospital; Gwilym Tremain Davies, National Dental Hospital; Chandulal Manilal Desai and Harold Graham Elliott, Guy's Hospital; Frederick Graham Emanuel and Francis Arthur Everett, Royal Dental Hospital; Guy Leroy Gillett, Michigan University; John Stanley Frank Horton, Royal Dental Hospital; Ernest Sharman Huckett, Guy's Hospital; Samuel Carson Huggins, Royal Dental Hospital; William Symons Lakeman, Guy's Hospital; Thomas Spencer Osmer and Arthur George Drake Pridham, Royal Dental Hospital; Warren Longtoft Roberts and Henry Clifford Robinson, Leeds University; Arnold Victor Shilton, Birmingham University; Thomas Huddlestone Urwin, Durham University; Frank Wisher, Guy's Hospital; and Keith Eric Wood, Royal Dental Hospital.

Dental Metallurgy.—Patrick Boyle, Royal Dental Hospital; Arnold John Chapman, Guy's Hospital; Henry Charles Corke, Guy's Hospital; Philip Lewis Ealand, Bristol University; George Hobbs, Birmingham University; Charles Henry Housden, Guy's Hospital; Michael William Joseph, Birmingham University; Raphael Neft, William John O'Kane, Percy John Peatfield, Charles Joseph Phillips, and John Hampden Ross, Guy's Hospital; Leslie Shovelton, Birmingham University; Richard Reginald Steele, Guy's Hospital; Joseph Leslie Tucker, Royal Dental Hospital; John James Ward, Liverpool University; and Stanley Joseph Frederick Webb, Guy's Hospital.

APOTHECARIES' HALL OF IRELAND.—The results of the last quarterly examinations are as follows:—

FIRST PROFESSIONAL.

Biology.—M. Burke Kennedy and D. J. Chadwick.
Physics.—H. Hutchinson.

SECOND PROFESSIONAL.

Physiology.—J. M. J. Levens and W. MacArgan Scott.

THIRD PROFESSIONAL.

Pathology.—George M. Mayberry.
Pharmacy.—M. Neary.
Medical Jurisprudence and Hygiene.—M. Neary.

FINAL PROFESSIONAL.

Medicine.—W. J. Fletcher.
Surgery.—W. J. Fletcher and W. S. Davoux.
Midwifery.—W. J. Fletcher, W. S. Davoux, G. M. Mayberry, Adam Ardill, and J. V. Pestana.

EXAMINATION FOR REGISTERED PRACTITIONERS.

M. P. Desmond, P. V. Delan, and R. McDonnell.

FOREIGN UNIVERSITY INTELLIGENCE.—*Breslau:* Dr. K. Goebel, *privat-docent* of Surgery, has been granted the title of Professor.—*Düsseldorf (Medical Academy):* Dr. Oertel has been appointed *Dozent* of Otology and Director of the Ear Clinic; Dr. Graf, staff surgeon, *Dozent* of Military Surgery; Professor Joh. Müller of Rostock, *Dozent* of Physiology; and Dr. Köhlisch, staff surgeon, *Dozent* of Bacteriology and Hygiene.—*Jena:* Dr. Martin Zade has been recognised as *privat-docent* of Ophthalmology.—*Munich:* Dr. Max Borst of Würzburg has been appointed Professor of Pathological Anatomy and General Pathology in succession to the late Professor O. von Dr. Bollinger.—*Naples:* Dr. Andrea Ambrosio has been recognised as *privat-docent* of Internal Pathology; and Dr. Francesco Cascella as *privat-docent* of Criminal Anthropology.—*Padua:* Dr. Demetrio Roncali has been appointed Extraordinary Professor of External Pathology.—*Pavia:* Dr. Aldo Patta has been recognised as *privat-docent* of Materia Medica and Experimental Pharmacology.—*Prague (German University):* Dr. Julius Rihl has been recognised as *privat-docent* of Experimental and General Pathology.

THE MIDDLESEX SANATORIUM FOR WORKING-CLASS CONSUMPTIVES.—On April 25th a meeting was held at the Council House, Hounslow, in connexion with the proposal to establish a sanatorium for working-class consumptives in Middlesex. Mr. F. C. Greville-Smith, J.P., presided. Colonel Gerard Clark (originator of the scheme), in addressing the meeting, said that they did not propose to erect an expensive institution at £1600 per bed, like Northwood, but one of £100 per bed. The scheme would be on a 5*s.* basis, to enable all to take part. Donors of £100 would be life governors, and donors of smaller amounts to £100 would elect a governor. They had £500 promised. He had the offer of two sites—one in Buckinghamshire, which he thought too far off, and the other in their own county, the terms of which would be favourable. Sir Richard Douglas Powell also spoke, and said that the sanatorium was intended for the honest working man and should not be looked on as a charity at all. He agreed with the suggestion that while most of the beds should be kept for incipient cases, yet that a wing should be reserved for advanced cases. He thought such cases were not treated on such sympathetic lines as they should be, for it was also part of medical duty to prolong life and to lessen suffering, as well as to prevent disease. The following motion, proposed by Dr. G. A. S. Gordon and seconded by Mr. W. J. Lobjoit, J.P., was agreed to:—

That this meeting is of opinion that a sanatorium in the county of Middlesex, established on an economical basis, for the treatment and education of consumptives, would be a boon to the community and a safeguard to the public health. That a local committee be formed to work in coöperation with similar committees formed, or in the course of formation, in other parts of the county, in furtherance of the provision of such a sanatorium.

PRINCESS ALICE MEMORIAL HOSPITAL, EASTBOURNE.—In furtherance of the decision of the committee of the Princess Alice Memorial Hospital, Eastbourne, at the annual meeting in February last, a public meeting in support of the enlargement proposal was held on May 2nd, the Duke of Devonshire presiding. It is proposed to increase the accommodation at the hospital by the addition of wards to provide 16 beds at a cost of £4000. A resolution was carried opening a fund for the purpose of carrying out the work, and His Grace the Duke of Devonshire and Mr. Sydney Hudson, the former as mayor of the borough and the latter as chairman of the committee, each subscribed £500. There is urgent need for additional accommodation at the hospital. Built on the lines of a cottage hospital in 1883 it provided accommodation then for 12 beds. From time to time enlargements have been made and now the beds number 50. It is found that the hospital must mark time with the rapid growth of the borough and the development of the district around, for whereas in 1901 the number of patients was 331 the figure for 1909 was nearly double, being 659.

A PROPOSED BOARD OF REFERENCE.—At the annual conference of the Incorporated Society of Inspectors of Weights and Measures held on May 6th at the County Hall, Spring Gardens, Westminster, it was proposed that an expert board of reference should be constituted to decide controversial questions of chemistry, hygiene, or physiology, and to assist magistrates when dealing with such questions. This was carried without discussion. It was proposed that the British Pharmacopœia should be made a legal standard for medicinal articles, "but not until a new edition is compiled by the General Medical Council with this object in view," this being adopted with the omission of the words in inverted commas, the opinion of the conference being that the present edition ought to answer the purpose. It was decided that the Local Government Board should have power to fix standards and definitions of purity for articles of food, and to order the nature and amount of preservative or other ingredient in any article of food to be explicitly declared on the label and to prescribe the terms of the declaration. It being thought that "it would create too much opposition," the following recommendation was withdrawn: "That manufacturers of proprietary medicines containing certain potent drugs should be required to declare the composition by label, and that the exemption of proprietary medicines from the scope of the Sale of Food and Drugs Acts should be repealed."

THE FRENCH HOSPITAL.—The forty-second annual banquet of the French Hospital was held at the Hotel Cecil on Saturday, April 30th, under the presidency of M. Paul Cambon, the French Ambassador. He was supported by many members of the Corps Diplomatique, by the two sheriffs of the City of London—the Lord Mayor was unfortunately unable to be present—by almost the whole of the members of the Corps Médical, and about 280 subscribers. The treasurer announced subscriptions to the amount of £3700. Since the last annual banquet a new wing has been added and the interior of the whole hospital has been greatly improved. A new operating theatre has been constructed, with the addition of a room for the administration of anæsthetics and another room for the sterilisation of the surgical instruments. The corridors and staircases have all been lined with white tiles, and the wards have been thoroughly brought up-to-date. Altogether about £5000 have been spent, and the committee and staff are to be congratulated upon the way in which the work has been carried out. The hospital in London, together with its Convalescent Home at Brighton, which contains 70 beds, is a striking monument to the sympathy which exists between the two nations. After the usual toasts had been duly honoured, his Excellency the Ambassador referring in sympathetic terms to the work done by the late Dr. Vintras,

Dr. George Ogilvie, the senior physician, replied on behalf of his colleagues in French, the speech being greatly applauded.

THE ROYAL SOCIETY OF MEDICINE.—The first meeting for the Vaccine-Therapy Discussion to be held at Morley Hall, George-street, Hanover-square, W., has been postponed from Wednesday, May 18th, at 5 P.M., until Monday, May 23rd, at the same place and the same hour.

UNIVERSITY OF BIRMINGHAM.—The Ingleby lectures for 1910 will be delivered in the Medical Lecture Theatre on Fridays, May 27th and June 3rd, at 4 o'clock, by Professor R. F. C. Leith, the subject being Tumours of Body of Uterus. On Tuesdays, June 7th and 14th, at 4 P.M., Professor Peter Thompson will give in the Anatomical Lecture Theatre, Edmund-street, two lectures on Some Early Human Embryos. The lectures will be illustrated with models and lantern slides. Members of the medical profession and students of medicine are cordially invited to attend.

THE CHEMISTS' EXHIBITION.—The Chemists' Exhibition, which was opened at the Royal Horticultural Hall, Vincent-square, Westminster, on Monday, May 9th, represented the sixteenth of the series. That fact alone is evidence of the success of these meetings, and the recent occasion was as attractive as before, and a good many visitors passed up and down the lines of the picturesquely arranged exhibits. Primarily intended for the business side of pharmacy, the exhibition to some extent partakes of the nature of a commercial exchange, but it serves to show also many advances that have been made in pharmaceutical matters, and thus it naturally attracts the attention of medical men. The exhibition closes this week.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill have a new edition of Vol. II. of "Allen's Commercial Organic Analysis," just ready for publication. This volume has been rewritten under the editorship of Dr. H. Leffmann and Mr. W. A. Davis, B.Sc. The subjects and authors are as follows: Fixed Oils, Fats and Waxes, by C. A. Mitchell; Special Characters and Methods, by L. Archbutt; Butter Fat, by C. Revis and E. R. Bolton; Lard, by C. A. Mitchell; Linseed Oil, by C. A. Klein; Higher Fatty Acids, by W. Robertson; Soap, by H. Leffmann; Glycerol, by W. A. Davis; Cholesterols, by J. A. Gardner; and Wool Fat and Cloth Oils, by A. H. Gill. They also publish an illustrated handbook of "Morbid Anatomy and Post-mortem Treatment," by C. R. Box, M.D., F.R.C.S., F.R.C.P., physician to out-patients, St. Thomas's Hospital.

ROYAL INSTITUTION. — A general monthly meeting of the members of the Royal Institution was held on May 9th, the Duke of Northumberland, K.G., the President, being in the chair. The special thanks of the members were returned to Mr. Henry F. Makins for a donation of £50 to the fund for the promotion of experimental research at low temperatures. The chairman announced that he had nominated the following gentlemen as Vice-Presidents for the ensuing year: Sir Thomas Barlow, the Right Hon. Sir H. Burton Buckley, Sir William Huggins, Mr. A. B. Kempe, Sir Francis Laking, Mr. George Matthey, Sir James Crichton-Browne (treasurer), and Sir William Crookes (honorary secretary). The meeting adjourned to May 23rd, when a resolution of condolence on the lamented death of His Majesty the King will be passed.

THE ASSOCIATION OF FELLOWS OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.—The recently formed Association of Fellows of the Royal College of Surgeons in Ireland held a general meeting last week at the Gresham Hotel, Dublin. The increase in numbers since the foundation proves that the movement is finding support among the Fellows, whether resident in Ireland or elsewhere. The objects of the association are to further the welfare of the College, to induce the members to take an active part in the proceedings of the annual and other meetings, to approach the Council on all questions of material interest affecting the College, and to give the Council support in matters of professional interest. A council of 20 members was elected from among the members of the association, the first President selected being Lieutenant-Colonel F. G. Adye-Curran. The honorary secretaries are Mr. R. P. McDonnell (20, Lower Leeson-street, Dublin) and Mr. Andrew Charles (64, Harcourt-street, Dublin), and the honorary treasurer is Mr. C. J. Powell (30, Harcourt-street, Dublin). Letters expressing approval of the objects of the association were received from the President and various members of the Council of the College, and from many well-known Fellows in different parts of Great Britain and Ireland.

NEXT week's *Punch*, to be issued on May 18th, will be a Special King Edward Memorial Number, and will consist of 40 pages, chiefly of illustrations gathered from the pages of *Punch*, from the late King's birth in 1841 up to the date of his decease.

COLONIAL MEDICAL SERVICES.—*West African Medical Staff:* The death is announced of Mr. R. Welply, medical officer, Southern Nigeria. The following appointments have been made: Dr. G. de P. d'Amico (Gold Coast), Mr. G. F. Forde (Gold Coast), Dr. J. A. Harley (Gambia), Dr. A. Hutton (Northern Nigeria), Dr. J. Lindsay (Northern Nigeria), and Dr. R. C. Macpherson (Southern Nigeria). Dr. A. Hutton has been seconded in his appointment for a year to enable him to hold the post of demonstrator in the London School of Tropical Medicine. Mr. F. J. A. Baldwin has been transferred from the Gambia to Southern Nigeria.—*Other Colonies and Protectorates:* Dr. B. W. Cherrett has been appointed a medical officer in the East Africa Protectorate, Dr. E. P. Minett assistant Government bacteriologist in British Guiana, Mr. J. Pugh a medical officer in the East Africa Protectorate, and Mr. G. M. Sanderson a medical officer in the Nyasaland Protectorate.

THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET, W.C.: POST-GRADUATE CLASSES.—Special courses of instruction (of three months' duration each) in the Surgical Diseases of Children will be held by members of the surgical staff four times a year. The classes will be held twice a week, on Tuesdays and Thursdays, at 5 P.M., and will comprise 24 meetings in each course. The fee for a single course is £5, but tickets for part of a course at reduced fees may be obtained by arrangement with the secretary. The classes will be held in the out-patient department or the museum, and will be illustrated by cases, specimens, skiagrams, and sketches at each meeting. The first course will begin on Tuesday, May 17th, at 5 P.M., and will be subdivided as follows: Diseases of Joints, May 17th to June 9th, Mr. George E. Waugh; General Surgical Diseases, June 14th to July 7th, Mr. O. L. Addison; Deformities, July 12th to August 4th, Mr. H. A. T. Fairbank.

THE MEDICAL TREATMENT OF LONDON SCHOOL CHILDREN.—At the last meeting of the Education Committee of the London County Council it was reported that a difficulty had arisen with regard to the offer of the medical practitioners of Norwood to treat 1500 children at a local centre. The committee accepted the offer, but declined to contribute a sum of £175 asked for in respect of the equipment of the premises. The Norwood committee then wrote that in the absence of an equipment grant the scheme could not be proceeded with. In the case of certain hospitals the Council had made grants for the purchase of equipment on the understanding that any apparatus so obtained should be the property of the Council. The Norwood committee was prepared to accept a grant on this condition, and the Education Committee accordingly sanctioned the expenditure. The arrangements made with the authorities of St. George's Hospital for the treatment of children suffering from ringworm having been found inadequate, the Education Committee accepted an offer by the governing body of St. Mary's Hospital, Paddington, to deal with 200 cases for one year upon payment by the Council of £100 a year and a capitation grant of 7*s*. Children suffering from eye, ear, nose, and throat affections are already being treated at St. Mary's Hospital. The committee recently asked the Board of Education to allow the attendances of children at hospitals to count as attendances at school for the purposes of grant earning. The Board of Education has replied that Article 44 of the Code was framed to meet cases where medical inspection could not be carried on within school premises, and in view of the difficulties the Board did not propose to amend the Code in the way suggested. The

Council in its application urged that the arrangements made for medical treatment of school children were in accord with the wishes of the Board, and to this the Board of Education replied that the Council was responsible for the particular method of providing medical treatment which had been sanctioned for London. The committee decided to ask the Highways Committee to permit parents and children going to the hospitals under the Council's scheme for medical treatment to travel on the tramcars at reduced fares. The County Council on May 10th approved the arrangements submitted for medical treatment in Wandsworth. No controversial business was taken at the sitting, the consideration of the report of the Asylums Committee with regard to the early treatment of the insane being postponed until after the Whitsuntide recess.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next general or quarterly meeting will be held at 11, Chandos-street, Cavendish-square, London, W., on Tuesday, May 24th, under the presidency of Professor W. Bevan-Lewis, at 3 o'clock.

MEDICAL GOLFING SOCIETY.—The 1910 tournament will be held on Thursday, June 2nd, at Burnham Beeches, by the kind invitation of the Burnham Beeches Golf Club. Anyone on the Medical or Dental Registers can join by payment of the annual subscription to the society, which is 5*s.*, and includes entrance to the tournament. Play will be as follows: 18 holes match play *v.* bogey under handicap. Class I. Handicaps 12 and under. Class II. Handicaps over 12. The "Henry Morris" Challenge Cup and the Medical Golfing Society's gold medal will be awarded for the best score under handicap. A first and second prize and a prize for the best last nine holes will be given in each class. (No player shall take a first or second prize *and* the prize for the best nine holes.) No previous play will be allowed on the day. Members of the Burnham Beeches Golf Club will deduct two from their handicaps. A foursome sweepstake will be arranged in the afternoon. Players must send entry with their annual subscriptions (5*s.*) on or before Monday, May 30th, to Mr. L. Eliot Creasy, honorary secretary and treasurer, Medical Golfing Society, 36, Weymouth-street, London, W. (Telephone 904 Paddington). Conveyances will meet the trains at Burnham Beeches station (G.W.R.).

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BRIMBLECOMBE, S. L., L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Medical Officer to the Wellington (Somerset) and District Cottage Hospital.

CAMPBELL, R. H., M.B., Ch.B. Glasg., has been appointed House Surgeon at the Hampstead General Hospital, with which is amalgamated the North-West London Hospital.

CHEATLE, ARTHUR H., F.R.C.S. Eng., has been appointed Lecturer in, and Teacher of Aural Surgery to, King's College Hospital.

DEWAR, T. F., M.D., C.M. Aberd., has been appointed a Medical Inspector for Scotland to the Local Government Board.

HANCOCK, DEBORAH, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Inspector for the Gloucestershire Education Committee.

HARWOOD, T. E., M.B., Ch.B. Edin., has been appointed House Physician at the Hampstead General Hospital, with which is amalgamated the North-West London Hospital.

HERTZ, A. F., M.D., B.Ch. Oxon., M.R.C.P. Lond., has been appointed Physician for Nervous Diseases, with Charge of Out-patients, at Guy's Hospital.

HINCKS, THOMAS ERNEST, M.B., Ch.B. Edin., has been appointed District Medical Officer by the Hay (Brecon) Board of Guardians.

HINGSTON, CHARLES ALBERT, M.D. Lond., M.R.C.S., has been appointed Honorary Consulting Physician to the Crownhill Convalescent Home, near Plymouth.

JENKINS, G. J., M.S. Edin., F.R.C.S. Eng., has been appointed Assistant Aural Surgeon to King's College Hospital.

KINMOUTH, G. H., L.R.C.P. & S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Lisdoonvarna District of the county of Clare.

LOUGHRIDGE, J. C., L.R.C.P. & S. Edin., L.F.P.S Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Carnmoney District of the county of Antrim.

LYND, J. C., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Limavady District of the county of Londonderry.

MARTIN, A. G., M.B., B.S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Dungiven District of the county of Londonderry.

MOLLISON, W. M., M.C. Cantab., F.R.C.S. Eng., has been appointed Aural Surgeon to Guy's Hospital.

PIRIE, A. J., M.B., B.S. Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Ballindalloch District of the county of Banff.

PRANCE, GEOFFREY H., M.D., C.M. Edin., has been appointed Honorary Medical Officer to the Children's Convalescent Home, Weston-super-Mare.

PRITCHARD, URBAN, M.D. Edin., F.R.C.S. Eng., has been appointed Consulting Aural Surgeon to King's College Hospital.

ROSS, C. H. G., M.B., B.S. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Navan District of the county of Meath.

SCALES, JOHN EDWIN, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer and Public Vaccinator for the Kilmersdon District by the Frome (Somerset) Board of Guardians and for the Radstock District of the Clutton (Somerset) Union.

SOLTAU, ALFRED BERTRAM, M.D. Lond., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Physician to the Crownhill Convalescent Home, near Plymouth.

STEWART, MATTHEW J., M.B., Ch.B. Glasg., has been appointed Clinical Pathologist to the General Infirmary, Leeds.

THOMPSON, A. R., F.R.C.S. Eng., has been appointed Surgeon to the newly established Genito-urinary Department at Guy's Hospital.

WIGAN, CHARLES ARTHUR, M.D. Durh., M.R.C.S., L.S.A., has been elected Chairman of the Portishead (Somerset) District Council.

WILLIAMS, RICHARD, M.R.C.S., L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Oculist for the County of Carnarvon by the Education Authority.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALBERT DOCK HOSPITAL, Connaught-road, E.—Senior House Surgeon. Salary £75 per annum, with board, residence, and washing. Also House Surgeon. Salary £50 per annum, with board, residence, and washing.

ARMY MEDICAL SERVICE.—Ten Commissions in the Royal Army Medical Corps.

BANBURY, HORTON INFIRMARY.—House Surgeon. Salary £80 per annum, with board and residence.

BIRMINGHAM GENERAL DISPENSARY.—Resident Surgeon, unmarried. Salary £170 per annum, with rooms, &c. Also Resident Surgeon for from two to three months. Salary £4 4*s.* per week, with apartments.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Honorary Medical Clinical Assistant. Also Honorary Surgical Clinical Assistant.

BRISTOL ROYAL INFIRMARY.—Honorary Medical Registrar.

BRITISH LYING-IN HOSPITAL, Endell-street, W.C.—Resident Medical Officer. Salary at rate of £50 per annum, with board, lodging, and washing.

BRIXTON DISPENSARY, Water-lane, S.W.—Resident Medical Officer, unmarried. Salary £150 per annum, with apartments, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, residence, and laundry.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Surgeon, unmarried. Salary £80 a year, with board, lodging, and washing. Also Honorary Surgeon.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with rooms, board, washing, and attendance.

CROYDON GENERAL HOSPITAL.—Junior House Surgeon. Salary £60, with board, laundry, and residence.

DUDLEY, THE GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary £75 per annum, with residence, board, attendance, and washing.

DUNDEE SCHOOL BOARD.—Chief Medical Officer. Salary £400 per annum.

FLEETWOOD, ROSSALL SCHOOL.—Resident Medical Officer, unmarried. Salary £250 per annum, with board and residence.

FOLKESTONE, VICTORIA HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—Assistant House Surgeon. Salary £50 per annum, with board, residence, and laundry.

HELLINGLY, EAST SUSSEX ASYLUM.—Locum Tenens Assistant Medical Officer for about four months. Salary 4 guineas a week, with board, lodging, and washing.

HEMEL HEMPSTEAD, WEST HERTS HOSPITAL. — House Surgeon. Salary £100 per annum, with rooms, board, and washing.

HOSPITAL FOR EPILEPSY AND PARALYSIS AND OTHER DISEASES OF THE NERVOUS SYSTEM, Maida Vale, W.—Resident Medical Officer for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Assistant Casualty Medical Officer, unmarried, for six months. Salary £30, with board, residence, and washing. Also House Surgeon and House Physician, early in July.

JERSEY GENERAL DISPENSARY AND INFIRMARY.—Resident Medical Officer. Salary £100, with board and lodging.

KENDAL, WESTMORLAND CONSUMPTION SANATORIUM.—Assistant Resident Physician, unmarried. Salary £100 per annum, with residence, board, &c.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—House Surgeon for six months. Salary £50 per annum.

MANCHESTER CORPORATION.—Medical Officer (female) under the Midwives Act, 1902. Salary £250 per annum.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—Honorary Physician.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—House Physician at Northwood. Salary £75 per annum, with board, residence, and washing.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Albany Memorial), Queen-square, Bloomsbury.—Senior House Physician. Salary £50 per annum, with board and residence.

NEW HOSPITAL FOR WOMEN.—Assistant Surgeon, House Physician and Resident Medical Officer, and Clinical Assistant (all females).

NOTTINGHAM GENERAL HOSPITAL.—Locum Tenens. Salary £45, with board, lodging, and washing.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and washing. Also House Physician. Salary £75 per annum, with board, residence, and washing.

PRESTWICH, COUNTY ASYLUM, Manchester.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, and washing. Also Locum Tenens, unmarried, for six to eight weeks. Salary 4 guineas per week, with apartments, board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Two House Surgeons and House Physician, each for six months. Salary £60 per annum, with board, residence, and washing.

REDHILL, EARLSWOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £130 per annum, with board, lodging, and washing.

ROYAL EAR HOSPITAL, Soho.—Honorary Assistant Anæsthetist.

ROYAL EYE HOSPITAL, Southwark, S.E.—Honorary Assistant Surgeon.

ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Ventnor.—Two Assistant Resident Medical Officers, unmarried. Salary £100 per annum each, with board, lodging, and washing.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN.—Surgeon.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand, W.C.—Clinical Assistants for six months.

SALISBURY, FISHERTON HOUSE ASYLUM.—Assistant Medical Officer unmarried. Salary £150 per annum, with board, washing, lodging, &c.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £50 per annum, with board, lodging, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Senior House Surgeon. Salary £100 per annum, with residence, board, and washing.

STAMFORD, RUTLAND, AND GENERAL INFIRMARY AND FEVER HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, washing, and residence.

SWANSEA GENERAL AND EYE HOSPITAL.—House Physician. Salary £75 per annum, with board, washing, and attendance.

TAUNTON, TAUNTON AND SOMERSET HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—Assistant in Anatomy and Curator of the Anatomical Museum.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary £30, with board, lodging, and laundry.

WAKEFIELD, COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE.—Lady Medical Inspector. Salary £300 per annum.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Out-patients' Physician.

WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician for six months. Board, lodging, and laundry allowance provided.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon. Salary £80 per annum, with board, rooms, and laundry.

Births, Marriages, and Deaths.

BIRTHS.

NOEL-COX.—On May 7th, at Elcove, Eastbourne, the wife of Herbert Lovis Noel-Cox, M.D., F.R.A.S., of a daughter.

WEBSTER.—On April 28th, at the Barracks, Shoeburyness, the wife of Captain J. A. W. Webster, R.A.M.C., of a son.

MARRIAGES.

ELLIOT—STANLEY-SMITH.—On May 6th, at Vancouver, British Columbia, Frederick H. T. Elliot, son of Lieutenant-Colonel A. F. Elliot, late Royal Army Medical Corps, of Exmouth, to Mary Doris Stanley, daughter of E. Stanley-Smith, M.D., of 68, Wimpole-street, W.

HOMAN—LONGFIELD.—On April 27th, at St. James's Church, Mallow, Thomas Delapere Homan, M.D., to Elizabeth Frances Rose, daughter of the late Henry Longfield, of Broadview, Mallow.

DEATHS.

CAMERON.—On May 7th, at Aldershot, Kenneth Mackenzie Cameron, Major, R.A.M.C., of tetanus, resulting from an accident, aged 41 years.

HITCHINS.—On May 8th, at Trevarrick, St. Austell, Cornwall, Frederick Charles Hitchins, M.R.C.S., L.R.C.P., F.R.C.S. Edin., aged 38 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

CLIMATE AND PUBLIC HEALTH IN BRITISH EAST AFRICA.

Sir E. P. C. Girouard, K.C.M.G., D.S.O., Governor of the East Africa Protectorate, has forwarded to the Colonial Office his annual report for 1908-09, in the course of which it is stated that the population of the Protectorate is roughly estimated at 4,000,000, including about 2000 whites. The Births and Deaths Registration Ordinance renders compulsory the registration of the deaths of Europeans, Americans, and Indians throughout the Protectorate, and of all deaths, including natives, in township areas. The registration of births among natives is not, however, required, and the number of deaths is only a small proportion of those which occur. It would be obviously impossible to register all native deaths, and the figures given cannot be looked on as accurate or in any way a test of the growth or decline of the population. The returns of births (European, American, and Indian) for 1908-09 numbered 172, whilst those of deaths (including natives in townships only) totalled 1588. The year could not be considered as a favourable one as far as the public health was concerned, and the death-rate largely increased. As regards the health of Europeans generally, the number of admissions to hospital was considerably more than in 1907-08, and there were probably many unrecorded cases occurring on outlying farms beyond the reach of medical aid. Nervous diseases play a prominent part, and, situated as the Protectorate is practically on the Equator, and as far as the bulk of the population is concerned at a considerable altitude, it is, to say the least, open to question whether East Africa can ever become what is known as a White Man's Country. The climate is an ideal one for travellers and sportsmen, provided that they avoid certain districts, and there are few parts of the world where a holiday can be more enjoyably spent; but the general medical opinion is that continuous residence on the high plateau has a cumulative effect on the nervous system, often culminating in a complete breakdown in cases where there has been overwork or mental anxiety. Settlers and merchants find it necessary to pay periodical visits to Europe, and suffer in health when unable to do so. Twenty-three cases of enteric fever occurred with only one death, of which 14 were among Europeans, and it can safely be predicted that this disease will spread. Its existence points to the unsatisfactory condition of the sanitation and water-supply in certain localities. In view of the widespread existence of sleeping sickness in Kavirondo, it was decided to remove the natives from the lake shores, but they showed great reluctance to leave their villages near the lake, and especially their fishing, which is not only the chief source of their food-supply but also their amusement. It is also one of the most dangerous sources of infection. The scheme had to be temporarily abandoned owing to the unfortunate death of Dr. Baker, and it is greatly to be feared that moral suasion by itself will effect but little in this direction. There was an outbreak of plague, lasting over four months, at Kisumu, where, unfortunately, the disease appears to be endemic. There were 79 cases, 59 of which proved fatal, a death-rate of 74·68 per cent., considerably less than that during the last outbreak; this may be attributed to the prompt evacuation of infected villages and the use of Haffkine's serum. The number of blackwater fever cases has increased slightly amongst Indians and Goanese, but hitherto there has been no instance of an African native developing this disease. Malaria is responsible for a considerably larger number of cases and deaths than in previous years, and the deaths from tuberculosis have more than doubled. There were a few cases of beri-beri in the gaol at Nairobi, due, probably, to the unsuitability of the building, which will shortly be superseded by a new and up-to-date prison. Only two cases of leprosy came for treatment, but there is no doubt that this disease is very much more widely spread than is known, especially in the coast districts. Measures are being taken to enable the Government to exercise a stricter control than has hitherto been possible in this respect. There is a leper settlement at Mkonumbi, near Lamu. The cases treated for syphilis were less in number, but this forms no criterion of the extent of the disease, which it is to be feared is very prevalent. The number of admissions for rheumatism was considerably less than in 1907-08, the chief reason being probably the dry season. There is an increase in the number of cases of diseases of the eye and ear and of the respiratory system. Diseases of the digestive system, though forming a considerable item in the total number of cases treated, remained much the same as in the previous year. No striking developments or improvements in the sanitary conditions of the Protectorate can be chronicled, but there has been steady progress along the lines of municipal improvement already laid down. The lack of an adequate water-supply must be emphasised as a bar to efficient sanitation, and this applies especially to the four principal towns—Mombasa, Nairobi, Nakuru, and Kisumu. Much good work has been done everywhere in clearing bush and rank

vegetation, and drainage has made satisfactory progress. There are European Government hospitals at Mombasa and Nairobi. The former, one of the oldest buildings in the Protectorate, underwent some much-needed repairs, but it is questionable whether it will fulfil much longer the purpose for which it was intended. The new Nairobi hospital was opened during the year; it is a spacious and well-fitted building, and should provide ample accommodation for the needs of the town for many years to come. There are 30 native hospitals and dispensaries in the Protectorate, but the majority of these are quite unsuitable, not having been erected in the first instance for the purpose for which they are now used.

THE STERILISATION OF WATER BY MEANS OF ULTRA-VIOLET RAYS.

THE sterilisation of water by ultra-violet rays has passed from the region of experiment to that of actual practice. In an annotation in THE LANCET of April 2nd it was reported that work on a very large scale had lately been done in France, and that a complete system of sterilisation had been established for alimentary purposes, the sole agent employed being the ultra-violet rays created in the Cooper Hewitt lamp made from transparent quartz. We have since received from the Westinghouse Cooper Hewitt Company, Limited, of 151-152, Great Saffron-hill, Charterhouse-street, London, E.C., a copy of their list in which is described the Westinghouse water steriliser. This apparatus evidently represents the latest developments in this connexion and provides a constant supply of absolutely sterile water, should such be required, without imparting any taste to, or removing natural gases or salts from, the solution. Bactericidal action is due entirely to the ultra-violet rays, which are produced by a transparent quartz lamp of the "Westinghouse Silica" type suspended above and close to the surface of the liquid. Apparently the action is not due to the intermediary formation of ozone or peroxide of hydrogen. The ultra-violet rays being absorbed by opaque bodies the apparatus must be fed with clear water such as is generally delivered by a town supply. In any case matter in suspension in a water intended for drinking purposes is always objectionable and it is easily removed. The Westinghouse steriliser will deliver up to 132 gallons per hour of completely sterilised water. Apart from its application to many domestic and hygienic questions, there is clearly an important field for its employment in surgery and medicine. There is no difficulty in attaching the apparatus to the water service and the electric lamp operates on a direct current of 100–130 volts, the consumption being 3·5 ampères.

THE DANGERS OF CANNED FRUIT.

A HIGHLY important report was presented to the West Sussex county council by its public analyst, Mr. Otto Hehner, at the meeting on May 6th. In these days it would be thought that there could be no need to emphasise the evils and dangers that must arise from the consumption of impure and unsound food; but it is probably through the ignorance of the consumer as to what he is eating that there is such a large consumption of foodstuffs which may prove, and undoubtedly do in very many cases, very injurious to health. Mr. Hehner in his report draws attention to the dangers of eating tinned fruits canned as they are at the present time. "On opening a tin containing preserved tomatoes," Mr. Hehner says, "or any other acid fruit, it can in every case be easily observed that the tin surface shows marks of etching. The acid while in contact with the tin gradually attacks and dissolves it. As a consequence the tin gradually leaves the canister and permeates the fruit. The more acid and the older the goods the greater is the proportion of tin which contaminates the food, until a time is reached when the acid perforates the canister. Tin compounds are by no means without physiological action, and when ingested in quantities beyond 2 or 3 grains per day gradually accumulate in the body and then become injurious." Mr. Hehner goes on to refer to his analysis of seven samples of tomatoes, and expresses his opinion that those containing 3·2, 3·6, 5·0, 5·5, 6·5, and 6·8 grains of tin per pound were unfit for food. The figures refer to six of the seven samples, the remaining one, containing 2·7 grains of tin per pound, Mr. Hehner possibly thinks might not be injurious. And Mr. Hehner points out that his remarks not only apply to tomatoes but to pineapples, pears, peaches, and apples. These tinned fruit are eaten by the unwary in large quantities without obvious injurious effects, but if the consumer knew that what he does consume is fruit plus tin, he would, if he valued his health, object to this sort of delicacy. "In my opinion," Mr. Hehner says, "which is based upon the experience of very many years, I consider the preservation of acid fruits in tin canisters to be entirely improper and fraught with danger to the health of the community unless the 'canner' takes some means to protect the inner surface of the canister, by application of varnish or lacquer, from the attack of the acid. The trade in canned goods has assumed such gigantic proportions, and has been allowed to go unchecked for so many years, that it is impossible for an individual public officer like myself to stem the tide. I, nevertheless, take this, the first opportunity which I have had in my public capacity, to raise my voice of warning against the consumption of food of this kind, which from the very manner of its preservation is bound to be impregnated with a metal that should have no place in the human body." Mr. Hehner concludes his report by complaining of the absence of the necessary power to bring the persons who thus debase and defile food to justice, and wonders that the inhabitants of the country do not insist that the Government furnished its officers with that power.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Mr. E. Heron-Allen and Mr. A. Earland: On the Recent and Fossil Foraminifera of the Shore Sands of Selsey Bill:—V., The Cretaceous Foraminifera.—Mr. E. M. Nelson: On the Resolution of New Detail in Coccinodiscus Asteromphalus.—Dr. M. D. Ewell: Comparative Micrometric Measurements. Mr. E. Heron-Allen and Mr. A. Earland: Exhibition of Living Foraminifera from Selsey.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

TUESDAY.—4 P.M., Dr. E. Wynter: Clinique (Medical). 5.15 P.M., Lecture:—Dr. G. C. Cathcart: How to Treat Sore Throat.
WEDNESDAY.—4 P.M., Mr. T. P. Legg: Clinique (Surgical). 5.15 P.M. Lecture:—Dr. L. H. Pegler: Headaches in Relation to Obstructions in the Nasal Passages.
THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Museum Demonstration. 5.15 P.M., Lecture:—Mr. P. L. Mummery: The Treatment of Internal Piles.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 10.30 A.M., Demonstrations in Minor Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Operations of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. S. Taylor: Typhoid.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. 2.30 P.M., Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. Morton: X Ray Examination of the Digestive System (illustrated).
THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Armour: Operations for Hernia.
FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Medical Registrar: Demonstration of Cases. 2 P.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. X Rays. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Abraham: Cases of Skin Diseases.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. R. Carling: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.
WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye. 3.30 P.M., Special Lecture:—Mr. Cargill: Sympathetic Ophthalmitis.
THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 4 P.M., Special Lecture:—Dr. Lister: Infantile Feeding.
FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.
SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. Howell Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson).
TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G Auld). 2.30 P.M., Operations. Clinics:—Surgical (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Lecture:—Dr. R. M. Leslie: Irregularity of the Heart, its Causes and Significance.

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Dr. A. H. Pirie).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture:—Mr. W. Edmunds: Surgical Tuberculosis.
FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. Howell Evans). 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY.—4 P.M., Lecture:—Mr. Godlee: Foreign Bodies in the Air Passages.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY.—3.45 P.M., Lecture:—Mr. W. Wallis: Mouth and Teeth.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. J. Collier.

HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.

THURSDAY.—4 P.M., Lecture:—Dr. Batten: Influenzal Meningitis.

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MONDAY (16th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.),

TUESDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (18th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (19th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (21st).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 11th, 1910

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 5	29·67	S.W.	0·17	75	56	42	45	47	Cloudy
,, 6	29·44	W.	0·15	113	58	42	46	50	Cloudy
,, 7	29·65	W.	0·03	109	55	40	42	47	Cloudy
,, 8	29·64	S.W.	0·06	91	51	39	47	51	Cloudy
,, 9	29·72	N.	0·04	94	52	36	39	41	Overcast
,, 10	29·97	N.E.	0·12	96	56	39	41	45	Fine
,, 11	30·17	N.E.	...	111	59	40	44	46	Cloudy

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